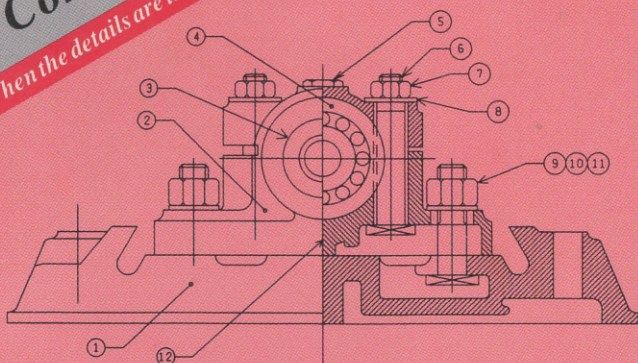# Home Designer

CAD for the Commodore 128

When the details are important!

Print this page out (select 'Actual size' setting) and cut out the following function key template. Sorry it's wrinkled, that's how I found it.

F1...INS LIN :	F2...INS ARC :
F3...DIR	F4...STATUS
F5...INS LIN HOR :	F6...INS LIN HOR LEN
F7...INS LIN VER :	F8...INS LIN VER LEN

THE HOME DESIGNER

DOCUMENT REVISION D

BY
JAMES R. KENDALL

REVISION STATUS

Chapter 3 has had every page altered to some
extent. Most are very minor consisting of
simplified Data Prompts, but upgrading users
would do well to look this chapter over.
Added: limited plotter capability
       Separated program into modules
       Added English Units and Appendix J
       Library Figures inserted on active layer
       Box figures
       Increased printer speed

Added: Disk copy info to Appendix H
       Appendix K
       Color controls for screen display
       High Resolution printer drivers

Removed: Hardware key protection

PRINTER AND INTERFACE COMPATABILITY

The following printers have been succesfully tested with this program.

   1. CITOH 8510 PROWRITER
   2. EPSON RX-80
   3. EPSON FX-80
   4. STAR SG-10
   5. STAR SG-15
   6. LEGEND 1080
   7. COMMODORE VIC-1525
   8. COMMODORE MPS-801
   9. SEIKOSHA SP-1000VC
  10. OKIDATA-120
  11. PANASONIC KX-P1091i

If your printer is not listed, but is graphics compatable with one of the above, particularly the EPSON printers, chances are the program will work with your printer.

The following interfaces have been succesfully tested with this program.

1. CARDCO CARD? +G
2. GWIZ
3. MICRO R&D, INC. MW-350
4. XETEC Super Graphix

PLOTTER AND INTERFACE COMPATABILITY

The following plotters have been succesfully tested
with this program.

    1. CBM 1520
    2. HEWLETT PACKARD 7470A

If you have access to a properly interfaced Hewlett
Packard compatable plotter, chances are the program
will work with it.

The only interface tested with this program is the
Omnitronix CBM serial to RS232 serial interface. USER
port interfaces will not work.

To Debbie, Doug, and Sam

TABLE OF CONTENTS

Please read "readme" file on disk,

for additional update information.

TABLE OF CONTENTS

Please read "readme" file on disk,
for additional update information.

INTRODUCTION

This program is designed to give the user the ability
to create detailed drawings and sketches. There are
basically two different types of CAD packages. The
first type is based on bit mapped graphics. This
means that all data entered into the program is stored
in the bit mapped screen display. The accuracy of the
final product is therefore, limited to the resolution
of your computer's display. The second type, which
includes this program, is object oriented. In this
type program, the data is stored in the form of
individual lines, circles and text strings, not pixels
to be turned on and off.   The drawing seen on the
screen is a representation of this data scaled to
whatever view the user has selected. When you magnify
or "zoom in on" an area in the first type of program,
your display will consist of "fat" dots representing
the bit map. In this program, "zooming in" will
actually increase the resolution of the area in
question.

A good way to visualize an object based drawing is as
a special type of database file. The program
constructs the drawing on the screen and ultimately on
the printer, using the information stored in the
database. When you select an object for some
manipulation, such as a rotation, the program has to
locate the object in the database. This is a
considerably more complex task than simply altering
pixels on the screen map (so much so that the program
switches to fast mode during the search).

This program supports the use of five layers. Each of
these layers can be considered an individual drawing
that can be overlayed on any or all of the other
layers much as transparencies can be overlayed. For
example, if house plans were being prepared, the basic
layout could be on one layer, the electrical wiring on
another, the heating and ventilation on a third. This
would allow the user to prepare multiple sheets using
the basic outline and excluding the layers not needed.

The drawing size represented by the screen display is
22" wide by 16" high. If the hardcopy device is a
standard carriage dot matrix printer, the output can
be scaled to half size or 11" by 8". The resolution
of the printouts vary from 72 X 60 DP1 for Commodore
compatable printers to 216 X 240 DP1 for Epson or IBM
compatable printers.

In addition to your sketches and figures, the program
supports the uses of library figures stored on disk.
These can be user defined and can be inserted at any
angle and scale.

Another useful aspect of the program is the ability to
used scaled text. Once a text string has been
inserted into the drawing, the size of the text can b
redefined to fit conditions. The default size of the
text can also be changed. Since text requires a great
deal of microprocessor time, it (text) can be "turned
off" when not needed.

The following chapters explain the operation and
syntax of the program. At this time it is recommended
that you read the System Overview, (Chapter 2), and
then work through the Tutorial, (Chapter 3).

The Tutorial has been arranged to cover the commands
in the same order as the screen menu. This allows you
to use the screen menu as a rough index during
operation of the program. An effort has been made to
have figures in the Tutorial adjacent to the
referencing instructions. In the past, I have found
it very irritating to read manuals that reference
figures several pages away.

APPENDIX H has been provided for the new CBM user.
This appendix contains a summary of some BASIC 7.0 DOS
commands. In addition, backup instructions are
provided for those users who only have the copy
utilities provided on the 1571 distribution disk from
Commodore.

Any feedback on the use or operation of this program
will be greatly appreciated. If you find a repeatable
bug, please include such information as the program's
response (ie: "lock up") and the series of commands
used to generate the error. Other information such as
an estimate of the number and type of entities
contained in the drawing could be helpful. My mailing
address can be found with the copyright notice in this
manual. I will provide a free update to the first
person documenting a particular bug.

APPENDIX X has been provided for the new CBM user. This appendix contains a summary of some BASIC 7.0 DOS commands. In addition, backup instructions are provided for those users who only have the only copy utilities provided on the 1571 distribution disk from Commodore.

Any feedback on the use or operation of this program will be greatly appreciated. If you find a repeatable bug, please include such information as the program's response (ie: "lock up") and the series of commands used to generate the error. Other information such as an estimate of the number and type of entities contained in the drawing could be helpful. My mailing address can be found with the copyright notice in this manual. I will provide a free update to the first person enumerating a particular bug.

SYSTEM OVERVIEW

Your "HOME DESIGNER" package should include this
manual, a program disk, and a function key overlay.
The program disk is NOT copy protected and you should
copy it and use the copy rather than the original. I
have included backup instructions in Appendix H for those
users who have only the copy utilities that came with
their 1571 disk drive.

To run "HOME DESIGNER" requires a Commodore 128
computer, a disk drive, and a mouse or joystick. I
highly recommend the mouse for it's ease of control as
compared to the joystick. As a side note, the right
button on the 1350 mouse, button "B", is not used
by this program (or any other that I know of) due to
the hardware configuration, you should also have a
blank formatted disk prepared prior to starting (see
APPENDIX H).   A TV or color monitor can be used as a
display, but better results can be had using a mono-
chrome monitor with a 40/80 column setting. On my
monitor, a Zennithy ZVM 121, in 40 column setting,
the pixels form an almost square matrix without a
correction factor (see APPENDIX F).

"HOME DESIGNER" consists of 4 program modules accessed
from the main menu. The main program provides the user
with the tools to create the drawings. A second module
handles output to a dot matrix printer and the third
module supports several plotters. The final module is
a configuration program which allows the user to specify
such things as the type of printer being used, the degree
of correction desired for the display, and the allocation
of the disk drive(s). A utility called TMERG is included
(see APPENDIX K) on the program disk. This utility allows
the user to incorporate text files from Paperclip into
a drawing.

"HOME DESIGNER" commands consist of a verb describing
the operation to be performed. In conjunction with the
descriptive verb, many commands use one or more
modifiers to further specify the desired operation.
Commands and modifiers can be represented by their
first three letters. In this manual, commands and
modifiers will be shown with the necessary input
letters capitalized and in boldface, ie:

<p align="center">INSert LINe</p>

The commands can be broken into three catagories;
GRAPHICS, INPUT/OUTPUT, and HOUSEKEEPING. These
commands are covered in depth in subsequent sections.

GRAPHICS COMMANDS

The graphics commands are utilized to create or modify
drawing entities. Drawing entities are discrete
drawing components such as individual lines, text
strings or circles. The graphic commands are:

 1) **INSert**   used to create drawing entities.
 2) **TRAnslate**   used to move drawing entities from one
                    location to another.
 3) **DELete**   erases drawing entities.
 4) **ROTate**   rotates drawing entities.
 5) **TRIm**   lengthens or shorten a line.
 6) **DIVide**   divides a line into 2 sections.
 7) **MIRror**   creates a mirror image of lines and
                    circles.
 8) **OFFset**   creates indentical parallel lines.
 9) **CHAnge**   used to modify the parameters, such as
                    text height, of existing entities.
10) **VERify**   provides the user with information about
                    an entity such as location, layer, etc.
11) **ZOOm**   allows the user to magnify, shrink, or
                    shift a view.

INPUT/OUTPUT

Input/output commands allow the user to access the disk drive(s). The I/O commands are:

1) **FILe**   used to store drawings on disk.
2) **LOAd**   used to retrieve drawings from disk.
3) **DIRectory** allows the user to list files on the disk.
4) **EXIT**   allows the used to leave the main program and return to the Main Menu.

HOUSEKEEPING

Housekeeping commands provide a means of modifying the screen display, program parameters, and drawing data. They are:

1) **SELect**   this command with the proper modifiers, allows you to change program parameters such as text height.
2) **INClude** used to include layers in the display.
3) **EXClude** used to turn off or exclude layers in the display
4) **DISplay** turns off the graphics display to allow viewing of previous commands.
5) **RESume**   used after **DISplay** or **LIBrary** to bring back the graphics display.
6) **REPaint** refreshes the graphic display.
7) **NEW**   used to clear the data base.
8) **PACk**   used to compress the database.
9) **LIBrary** used to create library figures.
10) **STAtus** gives the number of entities present on each layer and the memory remaining for text.
11) **CHEck**   used to remove bad data.

The "HOME DESIGNER" supports a database of 5 layers. Each layer can contain up to a maximum of 400 line entities, 100 circles, and 100 text strings.

DRAWING

Before starting this tutorial, it is recommended the user read the Introduction and System Overview to become familiar with the terms and commands. This program, like any powerful piece of software, requires practice, so don't expect to master it in one sitting. To get started:

1. **TURN THE COMPUTER AND DISK DRIVE OFF:**
2. Make sure the 40/80 display button on your computer is not depressed.
3. Set the monitor for forty columns (only if your monitor has a 40/80 column switch).
4. Plug your mouse (or joystick) into Port #2.
5. Insert the program disk into the disk drive.
6. In this order, turn on your monitor, then your disk drive. If you are planning to use it, turn on your printer. If you are using a 1351 mouse, depress the right mouse button and then last, turn on your computer.

The program will begin loading and display:

BOOTING... HOME DESIGNER

The title screen, with the copyright notice and program version, will appear for a few moments. Next, the main menu will come up offering you 5 choices:

1. EXIT HOME DESIGNER
2. RUN HOME DESIGNER
3. PRINT A DRAWING
4. PLOT A DRAWING
5. CONFIGURE HOME DESIGNER

If this is the first time you have run the program, you should choose selection 5 and follow the instructions in Appendix F. If you have already configured the program, choose selection 2 (the default) to start "HOME DESIGNER".

In this tutorial all letters that must be typed are printed in upper case and boldface, ie; **RUN "HOME DESIGNER"**. Normally, only the first three letters are required. A keypress such as the return key is shown in brackets, ie; [ret]. Program responses such as LOC are printed in upper case. As you type in the commands it is important to leave a space between each word. The exception to this is the colon, :, which terminates the command. When the program sees this character it automatically inserts the space. The syntax for most commands is as follows:

COMMAND [MODIFIER(S)] : ENTITY DATA ; COORDINATE DATA

Different portions of the command and data sequence are separated by the delimiters colon [:] and semi-colon [;]. The colon tells the program that the command sequence has been completed for those commands that require additional information. (NOTE: For some commands no additional information is required and a [return] is sufficient.) This additional information is given in the data section of the command where the program gives you the prompts ENT or LOC to indicate the type of data required. The ENT prompt indicates that the program needs the user to select entities. Lines, circles , text, and arcs are referred to as entities. Commands like translate, rotate, and mirror require entity selection and also require one or more drawing coordinates. The semi-colon is used to tell the program that the entity selection is completed. The program gives the LOC prompt indicating that drawing coordinates are required. Pressing [ret] after these prompts without entering the appropriate data results in the command being aborted.

After the program has loaded and the menu screen disappears, the work screen comes up and should look like FIGURE 1. At the top left corner of the screen the user will see the word "ACTIVE" and the number "1" This indicates that you are drawing on the first of five possible layers. To the right of the "ACTIVE"

display are the letters "TS" followed by a space and
the letter "T". The letter "T" is highlighted when
text is enabled. When text is disabled, letters and
numbers previously entered on your drawing are not
displayed, thereby speeding up the program. Next to
the "T" is the word "INC" with the numbers 1 through 5
highlighted. These numbers represent the five layers
of the program, with visable layers being highlighted.
At the right side of the screen is a menu of Home
Designer Commands. At the bottom of the graphics
display, you will see a "#" prompt. This is referred
to as the command line. The cursor is a flat
unblinking line next to the prompt. Your work area is
equivalent to a sheet of paper 16" high by 22" long.
In terms of X and Y coordinates, X0Y0 is located at
the bottom left corner. To clearly mark the
boundaries of the work area, a vertical line is
visable to the left of the menu with horizontal lines
at the top and bottom (of the vertical line) extending
to the left side of the screen. The actual location
of the vertical line will depend on the scaling factor
used in the setup program (see APPENDIX F).

```
ACTIVE 1 TS T INC 1 2 3 4 5      INSERT
                                 TRANSLATE
                                 DELETE
                                 ZOOM
                                 ROTATE
                                 SELECT
                                 REPAINT
                                 OFFSET
                                 TRIM
                                 DIVIDE
                                 MIRROR
                                 VERIFY
                                 CHANGE
                                 DISPLAY
                                 INCLUDE
                                 EXCLUDE
                                 PACK
                                 STATUS
                                 DIRECTORY
                                 FILE

#_
```
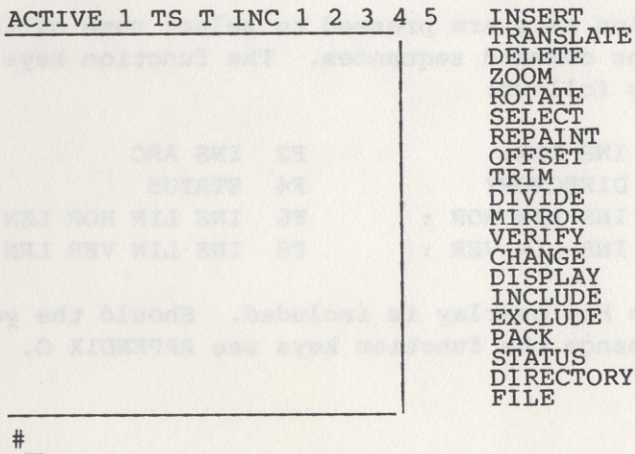
FIGURE 1

There are three methods of entering commands. They can be manually typed in from the keyboard, accessed from the menu, or entered by pressing the appropriate function key.

To use the menu, place the crosshair, using your mouse (or joystick), over the desired command and press the fire button. (NOTE: Only the left button is used on the mouse.) The selected command will appear on the command line at the bottom of the screen. If the command requires modifiers, such as the **LINe** modifier for the **INSert** command, the appropriate modifiers will be displayed in the menu column after the command is selected. (NOTE: Some modifiers, such as the **TEXt** modifier for **INSert**, are not included since the user will have to access the keyboard to use the command.) The desired modifier can then be selected in the same fashion as the command. After selecting the command (and modifiers if any) an additional press of the firebutton will produce a colon or carriage return as required. (NOTE: The crosshair must be in the menu column for the additional keypress.)

The function keys are pressed to select some of the more common command sequences. The function keys are defined as follows:

F1	INS LIN:	F2	INS ARC
F3	DIRECTORY	F4	STATUS
F5	INS LIN HOR :	F6	INS LIN HOR LEN
F7	INS LIN VER :	F8	INS LIN VER LEN

A function key overlay is included. Should the you wish to change the function keys see APPENDIX G.

Now try moving your crosshair around with your mouse
or joystick. If your crosshair moves too fast for you
type:

                SELect SPEeed 50 [ret]

The crosshair should move a bit slower. By increasing
the number you will slow down the crosshair.

INSERT

SYNTAX:

#**INS**ert [space] [modifier(s)] [:] DATA

The **INS**ert command is used to put lines, text, arcs,
circles, boxes, and library figures on the drawing.
The command will always have one modifier representing
the type of entity. Other modifiers, depending on the
entity, provide for such things as scale and size.
DATA, for this command, represents the point or points
on the drawing necessary to position the entity.

To draw a line as shown in FIGURE 2, type:

INSert **LIN**e :

or press [F1]. A line requires two pieces of data, a
starting point and an ending point. After you press
the colon, the program will respond with "LOC", (If
LOC does not appear, make sure you have pressed the
[:] after **LIN**e.) asking for the start of the line.
There are two ways to enter data. The first is with
the keyboard in the form X#Y# where X#Y# represents
the x-y coordinates of your line. The second way is
to use a mouse or joystick to move the crosshair and
then depress the firebutton on the joystick (or the
left button on the mouse) at the desired position on
the screen. Let's start with the keyboard input.
Type:

X5Y5,

The comma tells the program that both X and Y
coordinates are complete. Both X and Y coordinates
must be given, as leaving one out will give erratic
results. A small "x" (point P1 on FIGURE 2) will now
appear on the screen at the starting point of your
line.
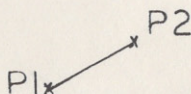
Now type:

<div align="center">X10Y8, [ret]</div>

This is the coordinate for the end of the line. The comma after the second coordinate is optional. Your line will appear on the screen after the [return] keypress and a new prompt ,"#", will appear on the command line.

```
ACTIVE 1 TS T INC 1 2 3 4 5    INSERT
                               TRANSLATE
                               DELETE
                               ZOOM
                               ROTATE
                               SELECT
                               REPAINT
                               OFFSET
                               TRIM
                               DIVIDE
                               MIRROR
                               VERIFY
                               CHANGE
                               DISPLAY
                               INCLUDE
                               EXCLUDE
                               PACK
                               STATUS
                               DIRECTORY
                               FILE
```

```
                    x P2
          P1 x
```

<div align="center">#INSERT LINE : LOC X5Y5,X10Y8, [ret]</div>

<div align="center">FIGURE 2</div>

Had you not pressed [ret], you could have continued by entering a second pair of coordinates.

<div align="center">page 3.1.7</div>

To use the menu, place the crosshair over the **INSert**
command and press the firebutton to display the
appropriate legal modifiers (FIGURE 3). Select the
LINe modifier (by pressing the fire button a second
time). Press the firebutton a third time with the
crosshair still in the menu column and a colon will
appear on the command line. When the LOC prompt
appears, move the crosshair within the drawing area
and press the firebutton. A small "x" will appear
(point P1 on FIGURE 3) at the center of the crosshair
and a "D," will appear on the command line (NOTE: the
"D," that appears on the command line is the program's
way of acknowledging you have pressed the firebutton).
Now move the crosshair to another place within the
drawing area and press the firebutton again. Another
"x" will appear (point P2 on FIGURE 3) along with
another "D," on the command line and a line will
appear between the two x's. To exit the command
press:

                        [ret]

Had you not pressed the [return] key, but instead
defined two more points (by pressing the fire button)
then a second line would have been created.

Before continuing the discussion of the **INSert**
command, a bit of housekeeping is in order. Type:

                   NEW [ret]

The display will blank momentarily and when it returns
your work area will be cleared.

ACTIVE 1 T'S T INC 1 2 3 4 5

LINE
LIN HOR
LIN HOR L
LIN VER
LIN VER L
LIBRARY
CIR RAD
ARC

P2

P1

#INS LIN : LOC D,D, [ret]

FIGURE 3

The **HORi**zontal modifier, when used with **INSert LINe**, allows the user to draw horizontal lines "freehand" with a mouse or joystick (see FIGURE 4). Type:

INSert LINe HORizontal:

on the command line, press [F5], or select the command and modifiers from the menu. Again you will see the prompt "LOC". Use your mouse (or joystick) to move the crosshair to the left lower quadrant of the drawing and press the firebutton. A small "x" (Point P1) will appear at the center of the crosshair. Move the crosshair anywhere in the right upper quadrant of the drawing and again press the firebutton (Point P2). Press :

[ret]

Even though you gave it a second Y coordinate greater than the first, you still got a horizontal line. If you do not press [return], but instead continue selecting points, you will make additional horizontal lines. The **VER**tical modifier works the same way (F7).

The **LEN**gth modifier,(F6 and F8), used to specify an exact line length, will only work with the **HORi**zontal and **VER**tical modifiers. As before, two coordinates need to be specified, but in this case the second coordinate is used by the program only to determine whether to draw the line to the left or the right of the first point (NOTE: If you are using the **VER**tical modifier, the second point determines whether to draw the line above or below the first point.) Also, the order is important, ie **INSert** first, **LINe** second, **HORi**zontal third, and **LEN**gth last (The **LEN**gth modifier is abbreviated "L" in the menu shown in FIGURE 4). Now let's specify a length of 5.3 inches on your drawing. Type :

INS LIN HOR LENgth **5.3:**

```
ACTIVE 1 TS T INC 1 2 3 4 5    INSERT
                               TRANSLATE
                               DELETE
                               ZOOM
                               ROTATE
                               SELECT
                               REPAINT
                          P2   OFFSET
                        x      TRIM
                               DIVIDE
                               MIRROR
                               VERIFY
                               CHANGE
                               DISPLAY
   P1                          INCLUDE
      x                        EXCLUDE
                               PACK
                               STATUS
                               DIRECTORY
                               FILE
```

#INSERT LINE HORIZONTAL : LOC D,D, [ret]

FIGURE 4

on the command line, press F6, or select the comand
and modifiers from the menu. As in the previous
example, digitize (by pressing the fire button) two
points near the center of the drawing. A horizontal
line will be drawn 5.3 inches long starting at the
point of your first "x" and ending in the direction of
your second point. (NOTE: The line shown on your
display is the equivalent of a 5.3 inch line on your
16" X 22" drawing. The line will not be 5.3" long on
your screen.) The **INSert LINe VERtical LENg**th command
(F8) functions in a similar manner.

The program also has the ability to work in scaled
units, ie 1/4" = 1', which is the default scale (see
SELect SCAle). The user may enter dimensions in feet
and inches with the program making the necessary
conversions. At the default scale, 1/4" = 1', a line
specified as 4' long will be drawn 1".

page 3.1.11

The syntax for a typical dimension is:

9'8-3/4"

which translates as nine feet eight and three quarters inches (yes, it does allow fractions of an inch). The feet units may be whole numbers or decimal fractions such as 9.5' to represent 9 feet 6 inches. The dimensions must be typed with no spaces (9' 8-3/4" will yield incorrect results). Inches may also be represented as decimal numbers, ie 9'8.75".

This scaling capability only works with the **LEN**gth modifier for horizontal and vertical lines, the **OFF**set command, and the **CIR**cle command. See Appendix J.

Library figures are drawings saved to disk that can be inserted into other drawings. Plumbing fixtures, windows, doors, etc can be stored on disk and reused. This saves redrawing a standard figure each time you use it. A collection of some common figures is on the back of the program disk (See APPENDIX B). Place the disk with the library figures in the drive (If you are using the original disk, turn it over so that the program side is down). Now, to continue, we will **INS**ert a water closet stored on your program disk. Type:

INSert LIBrary WC.PL :

When the program responds with LOC, digitize a point near the center of the drawing. The program will access the drive specified for library figures (See APPENDIX F) and then draw a water closet at a 1"=1' scale on the drawing. The point you digitized (ie: the center of your crosshair when you pressed the firebutton) is referred to as the origin of the figure. (See APPENDIX B for the naming conventions and a list of figures). Although you can make multiple copies, for now press :

[ret]

The scale as mentioned above is 1"=1'. If you want to
insert the figure at a different scale, type:

INS LIB WC.PL SCAle .50 :

This time the figure will be inserted at .50"=1'.
What we are really doing is telling the program to
insert the figure at 1/2 size. (Do not confuse the
scale of insertion with the selected drawing scale,
the figures are originally drawn to an absolute size
which may or may not be the scale you are using for
your drawing. See APPENDIX B) Because of it's size,
the second figure will not be as recognizable as the
first one. The scale value can also be greater than
1.

The figure also can be inserted at angles. Type:

INS LIB WC.PL SCA .50 ANGle 90 :

The figure will again be inserted at a scale of
.50"=1', but in addition the figure will be rotated 90
degrees counterclockwise from the last figure. The
angle can be any value from -360 to 360.

Another modifier to the **INSert** command is used for
circles. Type:

INSert CIRcle RADius 1:

After the program responds with the LOC prompt,
digitize (by pressing the left button on the mouse or
firebutton on the joystick) a point near the center of
the drawing. The program will draw a circle 2" in
diameter centered on the point you digitized. (NOTE:
Circles are shown with 16 sides as a default. The
user may change the number of sides displayed up to
180 sides with the **SELect CIRcle** command.) Circle
dimensions may also be expressed in scaled English
units. For a discussion, see Appendix J.

Arcs may be inserted using the **INSert ARC** command
(F2). Keep in mind, that the three points required to
define an arc must be defined in a counterclockwise
sequence (see FIGURE 5). To demonstrate, type:

<p align="center">INSert ARC :</p>

The program will respond with LOC. Now select three
points as shown on FIGURE 5.

ACTIVE 1 TS T INC 1 2 3 4 5   INSERT
                                     TRANSLATE
                                     DELETE
                                     ZOOM
                        ⟋⟍ ⋆ P1   ROTATE
                       ⟋   ⟍   SELECT
                      ⟋   ⟍   REPAINT
                   P2 ⋆   ⟍   OFFSET
                      ⟍   ⟍   TRIM
                       ⟍   ⟍ DIVIDE
                        ⟍   ⟍ MIRROR
                         ⟍   ⟍ VERIFY
                          ⟍ ⋆ P3   ⟍ CHANGE
                                     DISPLAY
                                     INCLUDE
                                     EXCLUDE
                                     PACK
                                     STATUS
                                     DIRECTORY
                                     FILE

#INSert ARC : LOC D,D,D
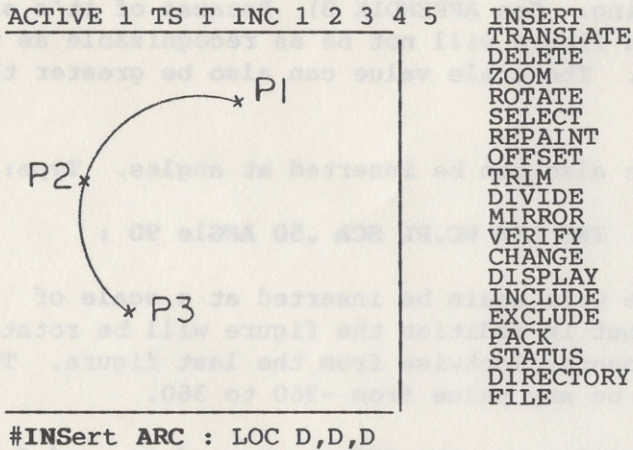
<p align="center">FIGURE 5</p>

You do not have to press [return] to complete the
command. Once created, arcs (and circles too, since a
circle is a special type of arc) may be transformed
into elliptical shapes. See the **CHAnge PARameter**
command sequence for a detailed explanation.

CAUTION: An arc is a segment of a circle and is stored
as such in the database with parameters including an
origin (or center point). This origin is calculated
from the three points and stored in integer format.
If the arc defines an almost straight line, it is

<p align="center">page 3.1.14</p>

possible to have an origin calculated that lies
outside the range of maximum integer values causing
erratic results. If you need a very slightly curved
segment, you should create a circle and then use the
CHAnge **PAR**ameter command to create an ellipse whose
long edge corresponds to the shape you need.

The **TEX**t modifier, as it's name implies, is used to
place text on the drawing.. Before we **INS**ert **TEX**t,
lets change the text defaults. When the program
starts, the default character size is .2" high and .2
" wide. This gives legible text for printouts, but is
unreadable at full view. We could **ZOO**m **WIN**dow the
area and "magnify" to make the text readable, but that
is another command we'll get to later. For now type:

<p style="text-align:center">**SEL**ect **TEX**t **HEI**ght **1** [ret]
SELect **TEX**t **WID**th **1** [ret]</p>

These commands change the default character size to a
height and width of 1 inch. To insert text type:

<p style="text-align:center">**INS**ert **TEX**t ABCDE :</p>

The program will respond with the LOC prompt. Use
your mouse (or joystick) and digitize (by pressing the
left button on the mouse or firebutton on the
joystick) a spot on the drawing. The text string
ABCDE will appear on the screen at the point you have
digitized, a [ret] is not necessary. The point you
selected on the drawing is used as the lower left
corner of the text.

To create a box, type:

<p style="text-align:center">**INS**ert **BOX** :</p>

and then select two points on the drawing representing
the diagonal corners of the box. The points can be
selected freehand with the mouse or entered in XY
units from the keyboard.

DATA MODIFIERS

A command sequence usually consists of three parts,
(1) the command, (2) the modifier(s), (3) and the data
portion. We have used the modifiers **SPE**ed, **LIN**e,
HORizontal, **VER**tical, and **LEN**gth. Before discussing
data modifiers, we need to clarify what is meant by
the phrase "data portion of the command". After you
pressed the colon in the examples above, the program
responded with "LOC". You were then in the data
portion of the command where the program asked you for
specific data. You responded by selecting points on
the drawing both from the keyboard and with the mouse
(or joystick). The Data Modifiers are used primarily
with mouse or joystick input to allow the user to snap
to specific points on <u>existing</u> lines, text, circles,
and arcs. If you wanted to create a corner, it would
be impossible to hold the crosshair exactly on the end
of the first line. By using the End data modifier,
however, the program will determine the precise end of
the existing line and "snap" the "x" to it. The data
modifiers are End, Origin, and Near. The End data
modifier, will snap the "x" to the end of a line, arc,
or circle closest to the selected point (NOTE: Circles
are a special type of arc. Because of this data form,
circles have two ends that coincide; One at 0 degrees
and one at 360 degrees.). The Origin data modifier
will snap the "x" to the center of a line, circle, or
arc and to the lower left corner of text. The Near
data modifier finds the point on a line closest to the
point you digitized with the mouse (or joystick).
TABLE 1 is a summary of entities and their appropriate
data modifiers.

Before continuing with Data modifiers, lets clean up
the screen. Type:

NEW [ret]

	LINE	CIRCLE	ARC	TEXT	BOX
END	X	X	X		
ORIGIN	X	X	X	X	X
NEAR	X				

TABLE 1

Since Data Modifiers operate on existing entities,
first, insert a line (see INSERT LINE). Once you have
a line on the drawing, type:

INSert LINe :

When you get the LOC prompt, type :

End

and move the crosshair to the existing line. You
don't have to be right on the line; The program will
detect the line if the crosshair is next to it. Press
the firebutton and the screen will blank for a moment
as the program goes to fast mode while searching the
database for the line. When the display returns, an
"x" will appear at the end of the line closest to the
crosshair. (NOTE: If, by some chance you are too far
from the line for the program to find it, the program
will respond with a /. Try again.) Now move the
crosshair away from the line and press the firebutton
again. A second "x" will appear at the intersection
of the crosshair. By pressing:

[ret]

a line will be drawn from the end of the line to your
second point. Pressing "O" instead of "E" would have
snapped to the center or "Origin" of the line. The
"Near" modifier snaps to the point on the line nearest
the crosshair. As shown in TABLE 1, all three of
these modifiers can be used with line entities.

TRANSLATE
_____

SYNTAX:

#**TRA**nslate [space] [optional modifier] [:] DATA

The **TRA**nslate command allows you to relocate entities
on the drawing. The command requires starting and
ending coordinates. (NOTE: The distance and direction
between the two coordinates is the important value to
keep in mind.) If you want to relocate an entity to a
specific location using the mouse or joystick, you can
use the data modifiers for either or both coordinates.
Before starting, clear the screen with the **NEW**
command. Now insert a vertical line near the center
of the work area (see FIGURE 6).

To try the command type:

                    TRAnslate :

The program will respond with the prompt ENT. The
program is asking you to identify the entity(s) you
wish to move, so now digitize the line you just
inserted. When you press the button, the screen will
blank while the program searches for the line in the
database. When the display returns a "D," will appear
after the prompt and the line you digitized will
"break up" by turning off every other pixel of the
line. This confirms which entity the program has
selected. (NOTE: Occasionally the breaking up will
not be as noticeable on some lines. If the line was
not found, the program will respond by placing a "/"
on the command line. Circles and arcs also break up
when selected, but text is denoted by a line through
it. When you have completed digitizing the entities
you wish to move, press the semi-colon:

                    [;]

                                    page 3.1.18

A maximum of 50 entities may be selected. If during
the selection process you digitized an entity by
mistake, press [esc] and the command will be aborted.
(NOTE: The escape key can be used to abort most
commands.)

The program will respond with the LOC prompt. The
program is asking you for the starting point of your
TRAnslation. Type:

<p align="center">X0Y0,</p>

The program will again respond with LOC. This time
the program is asking for the ending point. Type:

<p align="center">X5Y0, [ret]</p>

The program will erase the line you selected and
redraw it 5" to the right of it's original location.
(NOTE: Be sure to use the second comma).

```
  ACTIVE 1 TS T INC 1 2 3 4 5      INSERT
                                   TRANSLATE
                                   DELETE
                                   ZOOM
                                   ROTATE
  BEFORE                           SELECT
                                   REPAINT
                                   OFFSET
                                   TRIM
                                   DIVIDE
                                   MIRROR
                                   VERIFY
                                   CHANGE
                                   DISPLAY
                                   INCLUDE
                                   EXCLUDE
                                   PACK
  AFTER                            STATUS
                                   DIRECTORY
                                   FILE
```

#TRA : ENT D,;LOC **X0Y0,** LOC **X5Y0,** LOC [ret]
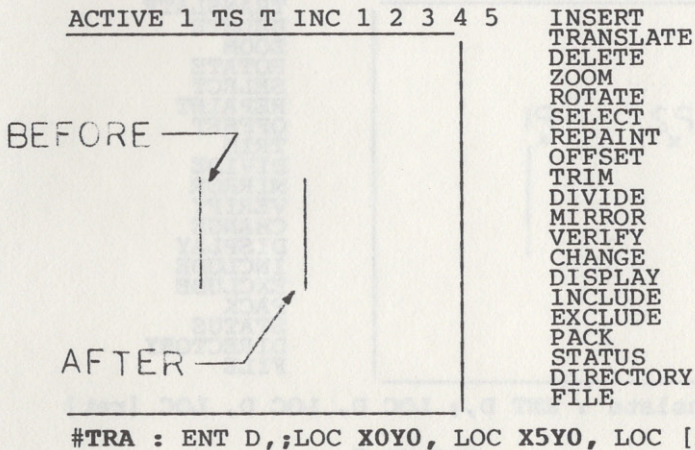
<p align="center">FIGURE 6</p>

To move 5" to the left instead of 5" to the right, the correct way would be to type X5Y0,X0Y0, as the program will not allow negative coordinates. As a rule of thumb for keyboard translations, if you want to move to the right or up, then start at X0Y0. If you want to move down or to the left, end at X0Y0.
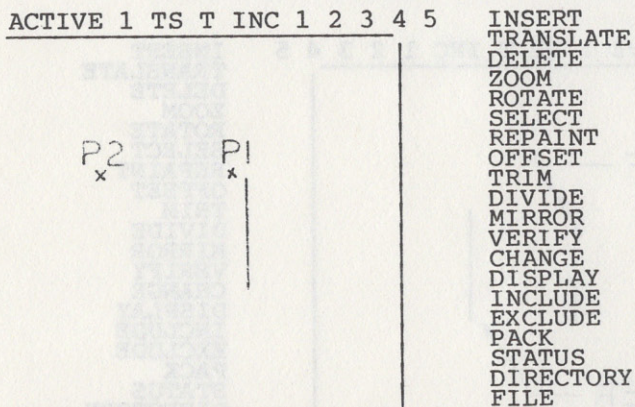
Translations can also be done by selecting points on the drawing with the mouse. To illustrate, type:

TRAnslate :

At the ENT prompt, digitize the vertical line (as created above) and press:

[;]

At the LOC prompt digitize 2 points as shown on FIGURE 7. The resulting translation will look like FIGURE 8.

```
ACTIVE 1 TS T INC 1 2 3 4 5        INSERT
                                   TRANSLATE
                                   DELETE
                                   ZOOM
                                   ROTATE
                                   SELECT
                                   REPAINT
        P2        P1               OFFSET
         x         x               TRIM
                                   DIVIDE
                                   MIRROR
                                   VERIFY
                                   CHANGE
                                   DISPLAY
                                   INCLUDE
                                   EXCLUDE
                                   PACK
                                   STATUS
                                   DIRECTORY
                                   FILE
```

#TRAnslate : ENT D,; LOC D, LOC D, LOC [ret]

FIGURE 7
(BEFORE)

ACTIVE 1 TS T INC 1 2 3 4 5

INSERT
TRANSLATE
DELETE
ZOOM
ROTATE
SELECT
REPAINT
OFFSET
TRIM
DIVIDE
MIRROR
VERIFY
CHANGE
DISPLAY
INCLUDE
EXCLUDE
PACK
STATUS
DIRECTORY
FILE

#_

FIGURE 8
(AFTER)

For an example using the data modifiers, first, insert
a horizontal line (see FIGURE 9) and type:

TRAnslate:

At the ENT prompt, digitize the horizontal line and
press:

[;]

This time when the program responds with LOC type:

End

and digitize the same line at point P1. The "x" will
snap to the end of the line closest to the crosshair
after the screen display returns. At the second LOC
prompt, type:

Origin

and digitize the vertical line at point P2 and press:

[ret]

The line will be relocated with one end at the center
of the vertical line.

The COPy modifier to the TRAnslate command works
similarly to the unmodifed TRAnslate command except it
leaves a copy of the entity(s) in the original
location. To demonstrate type:

TRAnslate COPy :

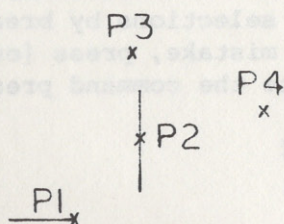Digitize the horizontal line as before and press:

[;]

At the LOC prompt digitize two points, P3 and P4, on
the drawing and then press:

[ret]

This time the line will not be erased at the old
location, but will be copied to a new location. You
may make multiple copies by digitizing more than two
points.

```
ACTIVE 1 TS T INC 1 2 3 4 5        INSERT
                                   TRANSLATE
                                   DELETE
                                   ZOOM
                                   ROTATE
          P3                       SELECT
           X                       REPAINT
          P4                       OFFSET
           X                       TRIM
                                   DIVIDE
        X P2                       MIRROR
        |                          VERIFY
        |                          CHANGE
                                   DISPLAY
      PI                           INCLUDE
        X                          EXCLUDE
                                   PACK
                                   STATUS
                                   DIRECTORY
                                   FILE
```

#**TRANSLATE** : LOC ED,OD, [RET]
#**TRANSLATE** **COPY** : LOC D,D, [RET]

FIGURE 9

DELETE

SYNTAX:

#DELete [space] : DATA

The **DEL**ete command, as it's name implies, is used to
erase entities from a drawing. To **DEL**ete entities
type:

DELete:

At the ENT prompt digitize the entities you wish to
delete (up to 50). As you select the entities, the
program will acknowledge your selections by breaking
up lines, etc. If you make a mistake, press [esc] to
abort the command. To complete the command press:

[ret]

ZOOM

SYNTAX:

#ZOOm [space] [modifier] [:] DATA

ZOOm **WIN**dow allows the user to define an area of the
drawing to be magnified. To demonstrate, first insert
the text string "ABCDE" (see INSERT TEXT). Now type :

ZOOm WINdow:

Digitize (by pressing the left button on the mouse or
firebutton on the joystick) a point to the left and
slightly above the text. A small "x" will appear. Now
move the crosshair and digitize a point slightly to
the right and below the text. What you are doing is
defining a window around the text. After you digitize
the second point, the screen will go blank for a
moment and then the text will reappear, this time much

larger. (NOTE: A number of the commands will cause
the screen to blank. This is due to the clock speed
being reset to 2 Mz for intensive calculations). You
can continue to zoom in to the resolution of the data.

The **ACRoss** modifier to the **ZOOm** command allows the
user to scroll magnified portions of the drawing. The
syntax is :

ZOOm ACRoss :

The program will respond with LOC. Digitize two
points on the drawing and the view will scroll the
distance from the first point to the second. (NOTE:
This command is ineffective at the full view).

To return to the full view of your drawing, type:

ZOOm ALL [ret]

Again the screen will blank and then return you to the
full display.

SYNTAX:

#**ROT**ate [space] [optional modifier] [space] [angle] [:] DATA

This command allows the rotation of entities about a
point at an angle you select where angle is any real
number between -360 to 360. A positive angle will
cause a counterclockwise rotation, conversely, a
negative number will cause a clockwise rotation. To
demonstrate, first clear the screen with the **NEW**
command and then insert a horizontal line as shown in
FIGURE 10. Now type:

ROTate 90 :

The program will respond with ENT. Now digitize the
horizontal line and press:

[;]

The line will break up in the same fashion as with the
TRAnslate command. When the prompt "LOC" appears,
digitize a point, P1 on FIGURE 10. The line will now
rotate 90 degrees about that point. You could as
easily have used any real number from -360 to 360.
The data modifiers, (End, Near, and Origin), can be
used to precisely position your rotation point. Now
type:

ROTate **COP**y 90 :

At the ENT prompt digitize the line you just rotated.
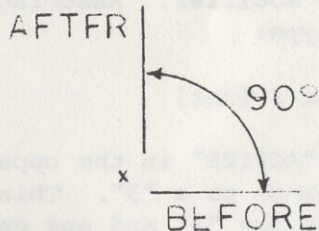Again press:

[;]

but this time type:

<div align="center">Origin</div>

and again digitize the line. The program will copy the line and rotate it 90 degrees about the center of the line with the final figure being that of a cross.

ACTIVE 1 TS T INC 1 2 3 4 5


```
                                    INSERT
                                    TRANSLATE
                                    DELETE
   AFTER                            ZOOM
                                    ROTATE
                                    SELECT
                           90°      REPAINT
                                    OFFSET
                                    TRIM
                                    DIVIDE
       x                            MIRROR
                                    VERIFY
                                    CHANGE
       BEFORE                       DISPLAY
                                    INCLUDE
                                    EXCLUDE
                                    PACK
                                    STATUS
                                    DIRECTORY
                                    FILE
```

#**ROTATE** 90 : ENT D,; LOC D, [RET]

<div align="center">FIGURE 10</div>

SELECT

SYNTAX:

#**SEL**ect [space] [modifier(s)] [data]

The **SEL**ect command, with different modifiers, is used
to modify program parameters. The active layer, as
represented by the number adjacent to the word ACTIVE
in the upper left corner of your screen, can be
selected by use of the **LAY**er modifier. Assuming the
current ACTIVE layer is 1, type:

SELect **LAY**er 3 [ret]

The highlighted "1" next to "ACTIVE" in the upper left
corner of the screen will change to a "3". This
signifies the active layer is now "3" and any entities
inserted will reside on layer 3.

The program's default character size is .2" high and
.2" wide. If you want all of your text to be inserted
at a height of 1", type:

SELect **TEX**t **HEI**ght 1 [ret]

All subsequent text inserted will be 1" high. If you
want to alter the default width, substitute **WID**th for
HEIght.

The **SEL**ect command can also be used to turn text on or
off. If you don't have a text string on the drawing,
insert one like you did at the first part of the
tutorial. Then type:

SELect **TEX**t **OFF** [ret]

The letter "T" to the right of the letters "TS" (which
stand for Text Status) on the Status Line at the top
of the screen will no longer be highlighted. Text
already present on the screen will remain visable

until the screen is refreshed. To verify this type:

REPaint [ret]

All text will be removed from the screen until you
type the command **SEL**ect **TEX**t **ON** [ret]. By turning
text off, the program will be speeded up due to the
reduced load on the CPU.

The **SEL**ect command is also used to specify the number
of sides displayed on a circle. The computer draws a
circle using a series of straight lines, so the
greater the number of lines, the better the resolution
of the circle. Unfortunatly, it also means the longer
it takes the computer to calculate the coordinates.
The default value, 16, is a compromise between speed
and resolution. To demonstrate type:

INSert **CIR**cle **RAD**ius 2 :

When the program responds with LOC, digitize a point
near the center of the workscreen. This creates a
typical circle with the default value. Now type:

SELect **CIR**cle 8 [ret]

where 8 represents the number of sides. The program
can use any even number from 2 to 180. Now **INS**ert
another circle adjacent to the first circle and
compare the difference. As a final note, the number
of sides selected (or default) has no effect on the
hardcopy produced by the printer.

The **SPE**ed modifier helps control the movement of the
crosshair. If you are having difficulty accuratly
placing the crosshair due to excessive movement, type:

SELect **SPE**ed 50 [ret]

Increasing the number will slow down the crosshair.

If you are using two disk drives, the **DEV**ice modifier
allows you to toggle between them when you want to
view different directories. The syntax is:

SELect **DEV**ice # [ret]

where # represents the device # usually 8 or 9.

If you are working in scaled English units (see
Appendix J), you may change the scale with the **SCA**le
modifier. As an example, for a scale of 1/4" = 1', a
popular architectural scale, type:

SELect **SCA**le .25" = 1' [ret]

All numbers must be entered in decimal form, ie .25"
for 1/4", and you must leave a space between the =
sign and the numbers.

REPAINT
‾‾‾‾‾‾‾

SYNTAX:

#**REP**aint [ret]

Occasionally, as you use the program you will notice
bits of graphic "trash" left over from commands that
modify entities. To clean the screen up type:

REPaint [ret]

The screen will blank for a moment while your figure
is redrawn. Should some graphic trash still remain,
try to **VER**ify and **DEL**ete it if the program
acknowledges it's presence. If it won't verify, try
the **PAC**k command and then **REP**aint. This should do the
job if the trash is due to corrupted data. If none of
the above works, please feel free to write me at the
address in the front of the manual. If possible,
enclose a copy of your data disk with a description of
your problem.

SYNTAX:

OFFset [space] [distance] [:] DATA

Occasionally you may want to construct multiple
parallel lines for a graph or chart. Add the ability
to define the distances between lines and you can see
OFFset is a very powerful command. To construct
parallel lines .5 inches apart, type:

OFFset .5:

When the program prompts you with ENT, digitize a line
by placing the crosshair over it and pressing the FIRE
button. (NOTE: **OFF**set does not work with text,
circles, or arcs.). The line will "break up" and the
program will respond with the LOC prompt. Now
digitize a point to one side of the line. The program
will draw a line parallel to the line you digitized
and .5 inches away. You may continue to digitize
lines using the sequence above to create multiple
parallel lines .5 inches apart. The command will work
with lines at any angle and is particularly useful for
such jobs as creating forms or perhaps laying out
walls on a floorplan. To exit this command press:

[ret].

The offset distance may also be expressed in scaled
English units (see Appendix J). As an example, type:

OFFset 3-1/2" :

and create a parallel line as discussed above. If you
are working in the default scale of 1/4" = 1', the
lines will be approximatly .072" apart on the drawing.

SYNTAX:

#**TRI**m [space] [optional modifier] [:] DATA

The **TRI**m command allows the user to modify the length
of existing line entities. (NOTE: **TRI**m will not work
with text, circles or arcs) The **TRI**m command supports
only one modifier, **INT**ersection. To demonstrate,
insert two lines, one horizontal and one vertical, as
shown in FIGURE 11. Then type:

TRIm:

When the program responds with ENT, digitize the
horizontal line by moving the crosshair over it and
pressing the firebutton. The line will "break up" and
you will be prompted "LOC". Digitize a point, P1,
beyond the end of the line and roughly "on line" with
an imaginary extension of the line. The line will
then extend to the point as shown on FIGURE 12. This
command can be repeated until you exit the command by
pressing:

[ret]

The **INT**ersection modifier to the **TRI**m command is used
to terminate a line at its intersection with another
line. Type:

TRIm **INT**ersection:

AT the ENT prompt digitize the vertical line (see
FIGURE 11). At this point, unlike the unmodified **TRI**m
command, the program will again respond with the ENT
prompt. This time, however, the program is asking you
to digitize the line to which you wish to trim the
vertical line. Digitize the horizontal line and the
vertical line will be trimmed even with it (the
horizontal line that is).

page 3.1.32

You can continue this command until you press:

[ret]
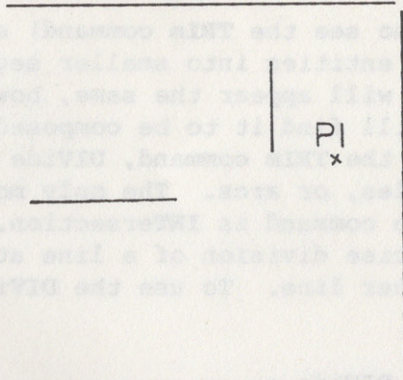
```
ACTIVE 1 TS T INC 1 2 3 4 5    INSERT
                               TRANSLATE
                               DELETE
                               ZOOM
                               ROTATE
                               SELECT
                               REPAINT
                    P|         OFFSET
                    ×          TRIM
                               DIVIDE
                               MIRROR
                               VERIFY
                               CHANGE
                               DISPLAY
                               INCLUDE
                               EXCLUDE
                               PACK
                               STATUS
                               DIRECTORY
                               FILE
```
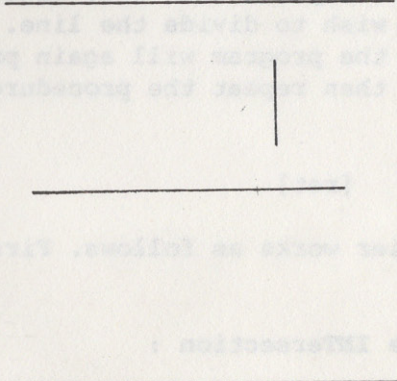
#TRIM : ENT D, LOC D, [RET]

FIGURE 11

```
ACTIVE 1 TS T INC 1 2 3 4 5    INSERT
                               TRANSLATE
                               DELETE
                               ZOOM
                               ROTATE
                               SELECT
                               REPAINT
                               OFFSET
                               TRIM
                               DIVIDE
                               MIRROR
                               VERIFY
                               CHANGE
                               DISPLAY
                               INCLUDE
                               EXCLUDE
                               PACK
                               STATUS
                               DIRECTORY
                               FILE
```

#

FIGURE 12

DIVIDE

SYNTAX:

#**DIV**ide [space] [optional modifier] [:] DATA

The **DIV**ide command (also see the **TRI**m command) allows
the user to break line entities into smaller segments.
After division, a line will appear the same, however
if you **VER**ify it you will find it to be composed of
two segments. As with the **TRI**m command, **DIV**ide will
not work on text, circles, or arcs. The only modifier
supported by the **DIV**ide command is **INT**ersection. This
modifier allow the precise division of a line at it's
intersection with another line. To use the **DIV**ide
command type:

DIVide :

and the program will prompt you with ENT. Digitize
the line you wish to divide by placing the crosshair
over it and pressing the firebutton. This action will
cause the line to "break up" indicating the selected
line. When the program responds with LOC, digitize
the point at which you wish to divide the line. The
line will "reform" and the program will again prompt
you with ENT. You may then repeat the procedure until
you press:

[ret]

The **INT**ersection modifier works as follows. First
type:

DIVide **INT**ersection :

The program will respond with ENT. Digitize the line
you wish to divide by placing the crosshair over it
and pressing the firebutton. The line will "break up"
and the program will again prompt you with ENT.

Now digitize the intersecting line and the first line
will "reform" and again you will receive the ENT
prompt.

To exit the command press:

<div align="center">[ret]</div>

As with the unmodified **DIV**ide command, the selected
line will be broken into two segments.

MIRROR

SYNTAX:

#**MIR**ror [space] [optional modifier] [:] DATA

The **MIR**ror command is used create the reflection of
entities about a user defined axis. An axis can be
defined as a real or imaginary straight line about
which entities can be mirrored. On a clean screen
(use the **NEW** command if necessary) insert a horizontal
line, L1, at roughly the center of your drawing (see
FIGURE 13). Now insert a diagonal line, L2 on FIGURE
13, using the **E**nd data modifier to connect it to the
horizontal line, L1. Type:

MIRror:

At the ENT prompt, digitize the diagonal line. Press :

[;]

and the program will respond with LOC. The program is
asking for two points that define the ends of the
axis. For this example let's use the horizontal line.
Press:

[E]

and then digitize one end of the horizontal line.
Press:

[E]

again and digitize the other end of the same line.
The diagonal line will now be mirrored about the
horizontal line (see FIGURE 14).

Entities may be mirrored leaving the originals
unchanged with the **COP**y modifier.

Type:

MIRror COPy:

Repeat the above procedure and the resulting figure
will take the form of an arrow.
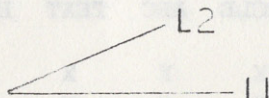
```
ACTIVE 1 TS T INC 1 2 3 4 5        INSERT
                                   TRANSLATE
                                   DELETE
                                   ZOOM
                                   ROTATE
                                   SELECT
                            L2     REPAINT
                                   OFFSET
                                   TRIM
                                   DIVIDE
                          L1       MIRROR
                                   VERIFY
                                   CHANGE
                                   DISPLAY
                                   INCLUDE
                                   EXCLUDE
                                   PACK
                                   STATUS
                                   DIRECTORY
                                   FILE

#MIRROR : ENT D,; LOC ED,ED,
```

FIGURE 13
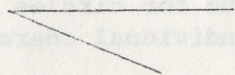
```
ACTIVE 1 TS T INC 1 2 3 4 5        INSERT
                                   TRANSLATE
                                   DELETE
                                   ZOOM
                                   ROTATE
                                   SELECT
                                   REPAINT
                                   OFFSET
                                   TRIM
                                   DIVIDE
                                   MIRROR
                                   VERIFY
                                   CHANGE
                                   DISPLAY
                                   INCLUDE
                                   EXCLUDE
                                   PACK
                                   STATUS
                                   DIRECTORY
                                   FILE

#_
```

FIGURE 14

NOTE: The MIRror command will not work with text or
boxes, and only on the horizontal axis with ellipses.

VERIFY

SYNTAX:

#**VER**ify [:] DATA

The **VER**ify command allows the user to extract
information about an entity from the database.
TABLE 2 gives the type of information you can expect
about each entity.

ENTITY		LINE	CIRCLE	ARC	TEXT	ELLIPSE	BOX
TYPE *		X	X	X	X	X	X
ORIGIN		N/A	X	X	X	X	X
START X,Y		X	N/A	N/A	N/A	N/A	N/A
STOP X,Y		X	N/A	N/A	N/A	N/A	N/A
START ANGLE		N/A	X	X	N/A	X	X
STOP ANGLE		N/A	X	X	N/A	X	X
RADIUS X **		N/A	X	X	N/A	X	X
RADIUS Y **		N/A	X	X	N/A	X	X
LENGTH		X	N/A	N/A	N/A	N/A	N/A
TEXT HEIGHT	***	N/A	N/A	N/A	X	N/A	N/A
TEXT WIDTH	***	N/A	N/A	N/A	X	N/A	N/A
LAYER		X	X	X	X	X	X
ANGLE		N/A	N/A	N/A	X	X	X

TABLE 2

* Circles, arcs, ellipses and boxes are listed as
arcs.
** Radius X and Y are the same for circles and arcs.
*** The value given is for individual character size.

To use the command type:

VERify :

When the program responds with ENT, select the entity
of interest by placing the crosshair over it and
pressing the firebutton. The screen will blank
momentarily while the program searches for the entity.
The graphic display will be turned off to allow you to
read the data. To regain the graphic display type:

RESume [ret]

CHANGE

SYNTAX:

#CHAnge [space] [modifier(s)] [space] [numeric data] [:] DATA

The **CHAnge** command is used to modify the
characteristics of an <u>existing</u> entity. The **CHAnge**
command is not to be confused with the **SELect** command.
The **SELect** command works on <u>program</u> characteristics.
When program characteristics are changed, all
subsequent entities inserted into the program will
conform to the new requirements.

The available modifiers for the **CHAnge** command are:

  1 **TEXt HEIght**
  2 **TEXt WIDth**
  3 **LAYer**
  4 **PARameters**

The **HEIght** and **WIDth** modifiers can be combined in a
single command, ie:

> **CHAnge TEXt HEIght # WIDth # :**

where "#" represents the character size in inches. At
the ENT prompt, digitize the text string in question.
This feature is useful to custom fit text to a
particular area on a drawing. Occasionally, the text
transformation will leave bits of graphic "trash"
behind. The **REPaint** command should clear this up.

The **LAYer** modifier allows the user to change the layer
on which an entity is stored. As an example, to
change an entity to layer 2, type:

> **CHAnge LAYer 2 :**

When the program responds with ENT, digitize the
entity by placing the crosshair over it and pressing

the firebutton. The program will then relocate the
entity's data to layer 2 and though the entity looks
the same, it now resides on the second layer.

The **PAR**ameter modifier works only with existing
circular figures. With this modifier the user can
vary arc lengths and radii to suit. Another
application of this command is the creation of
elliptical figures from existing circular figures.
The command requires 4 data entries. The syntax is:

CHAnge **PAR**ameter   #1 #2 #3 #4 :

where #1, #2, #3, and #4 represent respectively the
length of the X axis, the length of the Y axis, the
starting angle in degrees, and the ending angle in
degrees (see FIGURE 15). The angles may be any real
number between -360 and 360, but the starting angle
must be less than the ending angle. Warning: The X
value must be greater than the Y value.
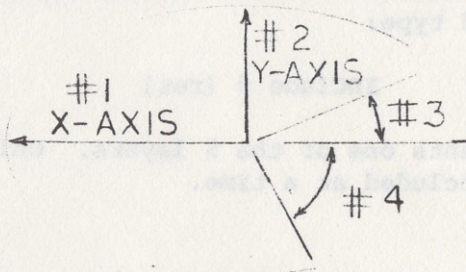
FIGURE 15

For example, to change a circle to the left half of a
3" X 2" ellipse, type:

CHAnge **PAR**ameter 3 2 90 270 :

Digitize a circle on the drawing and the program will
erase it and redraw it as an elliptical figure.
Should fragments of the old circle remain, use the
REPaint command to clean things up.

DISPLAY

SYNTAX:

#**DIS**play [ret]

The **DIS**play command "turns off" the graphic part of
the screen revealing information such as previous
commands that have scrolled up and are no longer
visable. NOTE: The **REP**aint and **NEW** commands will
erase this information.

INCLUDE

SYNTAX:

#**INC**lude [space] [numeric data] [ret]

The **INC**lude command restores layers that have been
previously turned off with the **EXC**lude command. To
use the command type:

                    INClude # [ret]

where # represents one of the 5 layers. Only one
layer may be included at a time.

EXCLUDE

SYNTAX:

#**EXC**lude [space] [numeric data] [ret]

The **EXC**lude command turns off layers that are visable
on the drawing. Layers that are excluded have not
been deleted but are simply not shown on the drawing.
EXCluded layers are not highlighted on the status line
at the top of the screen. You may not exclude the
active layer or more than one layer at a time.

As an exercise, clear the screen with the **NEW** command
and **INS**ert several lines, each on a different layer
(see **SEL**ect **LAY**er and **INS**ert **LIN**e). **INC**lude and
EXClude layers at random and observe the results. As
you **EXC**lude a layer, the screen will be redrawn with
that layer omitted and it's number deemphasized on the
status line. An **INC**luded layer will reappear and it's
number reemphasized on the status line.

PACK

SYNTAX:

#**PAC**k [ret]

During the course of a drawing session, holes can be
created in the datbase as entities are manipulated.
The **PAC**k command compresses data in memory and
attempts to delete any corrupted data elements. The
PACk command rearranges the data to fill in these
holes. To use the command type:

PACk [ret]

STATUS

SYNTAX:

#**STA**tus [ret]

The vectors that comprise your drawing are stored
within the computer in a database. While working on a
large drawing, the user needs to keep an eye on his
database. If you exceed the allowable number of
entities in the database your drawing could become
corrupted. The **STA**tus command displays the current
state of the database. To use the command type:

STAtus [ret]

The graphic display will be turned off, and the
database information printed to the screen. FIGURE 15
is a typical status display.

LAYER

	1	2	3	4	5
LINES	20	0	0	0	0
CIRCLES	6	0	0	0	0
TEXT	10	0	0	0	0

LINE ENTITIES (MAX 400 EACH LAYER)
CIRCLES (MAX 100 EACH LAYER)
TEXT STRINGS (MAX 100 EACH LAYER)

FREE BYTES OF DATA STORAGE= 5400
SCALE : .25" = 1'

FIGURE 15

The numbers 1 thru 5 on the first line represent, as
you might suspect, the five layers of the program.
The column on the left represents the entity types;
LINES, CIRCLES, AND TEXT. Below the numbers 1 thru 5
are columns of numbers showing the total number of

these entities in each layer. (NOTE: Circles, arcs, elliptical figures, and boxes are stored in the same section of the database.) For example, the number of circles in layer 1 as shown above is 6.

The next three lines are reminders of the total number of entities allowed on <u>each</u> layer. This means that you may have a total of 2000 lines in your drawing as long as you do not exceed 400 lines on a layer. The 5400 bytes of free data storage shown on the bottom line represents the amount of text storage available. Because lines of text can be of different lengths, it is impossible to predict the exact amount of storage necessary. Consequently, memory is allocated as text is entered. Although the program is configured to allow a maximum of 100 text strings on each layer, the length of the text strings may affect the actual number you can insert. The SCALE display indicates the scale for English Units (See Appendix J).

To call back the graphic display type:

<p align="center">**RES**ume [ret]</p>

and continue with your work.

DIRECTORY

SYNTAX:

#**DIR**ectory [space] [optional file data] [ret]

The **DIR**ectory command allows the user to list the
contents of the disk. The use of this command will
not affect the drawing in the workspace. When used,
the graphic display will clear allowing the user to
read the information. Type:

DIRectory [ret]

The optional file data represents one or more of the
beginning letters of a filename. This allows the user
to narrow the search for a particular file or groups
of files. For example, on the program disk are a
number of library figures representing plan views of
different sized windows. All of these figures begin
with "WIN.PL." (see APPENDIX B, LIBRARY FIGURES). If
you wanted to verify a particular window size type:

DIRectory **WIN** [ret]

The graphic display will clear and the files beginning
with "WIN" will be scrolled across the screen. To
interupt the scrolling, press the NO SCROLL key at the
top of your keyboard.

When using two drives, use the **SEL**ect **DEV**ice command
to toggle between the directories.

To return to the graphic display type:

RESume [ret]

and continue where you left off.

FILE

SYNTAX:

#**FIL**e [space] [filename] [ret]

The **FIL**e command allows the user to store drawings on
disk. Filenames up to 16 characters may be used.
(NOTE: It not a good idea to store your drawings on
the program disk. Use a separate <u>formatted</u> disk to
store your drawings. New users refer to APPENDIX H).
To save a drawing named "TEST", type:

FILe   TEST [ret]

The drive will come on and your drawing will be stored
under the filename "TEST". The program retains the
filename, so subsequent **FIL**ings will only require you
to type "**FIL**e [ret]" until the end of the session.
The program also retains the filename of a drawing
LOAded into the workspace. A good rule of thumb is to
file every half hour or less, because if you have a
power glitch, you will lose everything you have done
since your last **FIL**e.

The program defaults to the drive specified for
drawings in the CONFIG program. The **FIL**e command
does not differentiate between saving a drawing file
or a library figure file. If you are saving a library
figure, you must place your library disk in the drive
specified for drawings.

THE FOLLOWING SIX COMMANDS ARE NOT LISTED IN THE MENU

LOAD

SYNTAX:

#**LOA**d [space] [filename] [ret]

The **LOA**d command is used to retrieve drawings stored
on disk. To retrieve a drawing named "TEST" from the
disk, type:

$$\text{\textbf{LOA}d} \quad \text{TEST [ret]}$$

The disk drive specified for the drawing files, will
be accessed and then the screen will blank for a few
moments while the program generates the graphics. The
program "remembers" your filename, so subsequent
FILings do not require you to enter the filename. (see
the **FIL**e command).

NEW

SYNTAX:

#**NEW** [space] [optional modifier] [space] [number] [ret]

The **NEW** command is used to erase drawing data from
memory.   (WARNING: If you have not **FIL**ed your drawing
before using this command all data entered since your
last **FIL**e will be lost!) If this command is used
without the **LAY**er modifier, the resulting view will be
default size with all layers visable. To delete an
entire drawing type:

$$\text{\textbf{NEW} [ret]}$$

To selectivly delete a layer such as layer 5, type:

$$\text{\textbf{NEW LAY}er 5 [ret]}$$

RESUME

SYNTAX:

#RESume [ret]

To restore the graphic screen when it has been "turned
off" by the DISplay or some other command, type:

RESume [ret]

LIBRARY

SYNTAX:

#LIBrary [space] [coordinate data] [ret]

Custom library figures can be created by the user to
handle special applications. DO NOT CONFUSE THE
LIBRARY COMMAND WITH THE LIBRARY MODIFIER TO THE
INSERT COMMAND. To create a figure, draw it, then
decide upon an origin for the figure in X and Y
coordinates. The origin of a figure is defined as the
point where the figure is inserted into a drawing.
(See the INSert LIBrary command.) For example, the
origin of the water closet shown in APPENDIX B is
located at the center and slightly to the rear of the
figure. This origin was chosen because a real
watercloset is not located hard against the wall, but
offset somewhat. Once you have decided upon an origin
(use the VERify command to locate your figure's
components), type:

LIBrary X#Y# [ret]

where X#Y# represents the origin of your figure.
Though the figure looks the same, the coordinates of
it's components, as stored in the database, have been
transformed. Now, FILe your figure under an
appropriate filename. After you have FILed your
figure, REPaint your display to see how the figure

page 3.1.49

moved so the origin you selected is now located at the
bottom left corner of the work area. With most
figures, a portion of them will now be located outside
the work area and thus not visable. NOTE: The **FIL**e
command will default to the drive specified for
drawing files.

EXIT

SYNTAX:

#EXIT [ret]

This is the only command requiring four letters and is
used to leave the drawing module. After you press
[return], the program will ask if you want to save
your work. If you answer No, you will be returned to
the Main Menu. If you answer Yes, then you will be
returned to the program so you can file your drawing.
If you do not file your drawing, then all input since
your last file will be lost.

CHECK

SYNTAX:

CHEck [ret]

The **CHE**ck command deletes entities external to the
drawing boundary defined as a 22" wide by 16" high
area. Entities external to the drawing can be
accidentally created during such commands as **TRA**nslate
and **ROT**ate. For normal drawing purposes, other than
putting an extra load on the program, they don't
usually have much effect. Where they can cause a
problem, is when you are trying to print a drawing.
Under some conditions, external entities can cause the
print module to lock up. Since the print module uses
data already on disk, this won't cause you to lose
anything, but can certainly be annoying. CAUTION:
Don't use this command when creating **LIB**rary figures.

PRINTING

From the Main Menu, option #3 is to print a drawing.
Provided you have selected the correct printer driver
when you configured the program (option 5 on the Main
Menu), this option allows you to print your drawing on
a dot matrix printer. When you select the print
module, the disk drive will be accessed and the module
loaded. When the module is loaded, you will be
prompted for the name of the file you wish to print.
If you need to check the Directory, press:

? [ret]

Otherwise, type in the name of your drawing. (NOTE:
If you are using a two drive system, the program will
look for the file in the drive you specified for
drawings when you configured the program.) If you
want to print a sample drawing, use the filename:

CHAS.HOUSE.1

making sure that the program disk is in the drive
allocated for drawings. After your file has been
loaded, the program will display the current output
settings.

You are now asked if these settings are satisfactory.
If you want to change any of them, press:

N [ret]

and you will then be asked about each setting. The
next five paragraphs provide a description of each of
them.

The first item is the Pass Number. With "HOME
DESIGNER", the user can create a 16" high drawing on
an 8" printer by printing out the drawing in two
passes at full scale. Drawings printed on a vellum

page 3.2.1

material and then carefully spliced can be blueprinted
with excellent results. The lower half is printed
using PASS1 and the upper half with PASS2. If you
have a roll of vellum and don't need to feed each
sheet individually, the CONT option will print both
passes. For most drawings, the default setting of
PASS1 will be sufficient.

The next item is the Scale. "HOME DESIGNER" is an
object based program and stores it's data for a
drawing 16" high X 22" long. If you chose a scale of
1, you would have to use the PASS option described
above to see your whole drawing since most printers
have a print field 8" wide. The default scale of .5
shrinks your drawing so that it can be printed
half-size on a 8" X 11" sheet of paper. Until you are
ready to print a full size final drawing, these
half-size check prints do quite nicely.

The next item concerns the number of sides for
circular figures including ellipses. The computer
draws circles as a number of short straight lines.
The greater the number of lines, the better the
appearance of the circular figure. This improved
appearance reaches a point of diminishing returns
based on the size of the circle and the resolution of
the printer. In testing a printer with the highest
resolution of the printers supported, for most
circles, an arc length of 10 degrees or 36 sides works
quite well. Generally speaking, the smaller the
circle, the fewer the number of sides necessary to get
a good appearance. The only restrictions to the
number you choose is that it must be an even number
between 2 and 180 inclusive. Keep in mind that the
more sides you specify, the longer the printing will
take. For a large number of circles, this can be a
significant amount of time. In practice, very few
drawings will be exactly what you want the first time
out. You will often see things you would like to add,
change, or modify in some way. I generally make my
first print using the default value and adjust the

number of sides on subsequent drawings based on the first one.

The next line displays the active layers. "HOME DESIGNER" supports 5 independent layers for data storage and the user can print any number or combination. You will be asked, layer by layer, whether or not to include them. Answer "Y" or "N" and press [return] at each prompt.

The final line indictes whether or not you want your printout in draft mode or high resolution graphics. If your printer is not capable of high resolution output, this line will not be presented. Because of the greatly reduced printing speed of high res, you will probably want to restrict its use to final copies and use draft mode the rest of the time. Table 1 is a list of those printers supporting high resolution printing.

After changing the settings, you will be returned to the screen displaying the settings and again asked if you wish to change anything. This time type:

<p align="center">Y [ret]</p>

The screen will blank indicating the fast mode and your drawing will be sent to the printer. "HOME DESIGNER" has an internal line buffer, so expect the printer to pause every 5 lines (3 lines for high res) while the program "thinks" about the next set.

After the printing has been completed, you will be asked if you want to print the same file again. This option allows you to print a file at different scales without having to reload it each time. If you choose to reprint the file, the printing menu will reappear and you may proceed as before. If you choose not to reprint the file, you will then be asked if you want to print another file. If you choose to continue, you will be asked for another filename and begin again.

If you choose not to continue, you will exit the print
module and return to the Main Menu.

TABLE 1

PRINTER	DPI (DRAFT MODE)	DPI (HIGH RESOLUTION)
CITOH PROWRITER	72 X 160	144 X 160
EPSON RX 80	72 X 120	216 X 240
EPSON FX 80	72 X 120	216 X 240
PANASONIC 1091i	72 X 120	216 X 240
STAR GEMINI 10X	72 X 120	144 X 240
STAR GEMINI 15X	72 X 120	$144 X 240
STAR SG10	72 X 120	*216 X 240
STAR SG15	72 X 120	$*216 X 240

$ Due to buffer size, draft mode for 15" carriage
printers will be a full 13.6" wide, but High
Resolution will only be about 12.75" wide.

* The Star SG10 and SG15 have to be set in the IBM
mode (Dip Switch 2-2, page 231 of the Star Reference
Manual) for High Resolution. For Draft mode leave the
printer in the STAR mode. If you don't feel like
fooling with the switches, identify your printer as a
GEMINI during the Configure session but remember that
you are giving up 1/3 of your horizontal resolution.

The Plotting module, like the Printing module, is
accessed from the Main Menu. (NOTE: Before using this
module, you must configure the program for the plotter
you are using. The configuration mudule is #5 on the
Main Menu. For hardware setup see Appendix D.) When
the plot option is selected from the main menu, the
module will be loaded from disk. After loading, you
will be prompted for the name of the drawing file. If
you are not sure of the filename, press:

? [ret]

Otherwise, type in the name of your drawing. (NOTE:
If you are using a two drive system, the program will
look for the file in the drive you specified for
drawings when you configured the program.) If you
want to plot a sample drawing, use the filename:

CHAS.HOUSE.1

making sure that the program disk is in the drive
allocated for drawings. After your file has been
loaded, the program will display the current output
settings.

You are now asked if these settings are satisfactory.
If you want to change any of them, press:

N [ret]

and you will then be asked about each setting. The
next three paragraphs provide a description of each of
them.

The first group of settings indicates the pen number
used for each of the five layers. With multi-pen
plotters, you can have layers printed in different
colors. If you answered "N" above, you will be asked

page 3.3.1

for the pen number for each layer. See your plotter
manual if you are not sure of the numbering sequence
for your pens (NOTE: The CBM 1520 plots four small
boxes when it is turned on. The pens are used from
left to right giving a quick visual check of color
locations.)

The next setting represents the scale of the drawing
and is pretty much self explanatory except for the CBM
1520 plotter. Since the CBM 1520 has a vertical print
resolution of only 480 points and the data is stored
in a integer format (0 to 16000), the default scale of
.03 was chosen to allow a drawing to "fit" the range
of the little plotter.

The final line displays the active layers. "HOME
DESIGNER" supports 5 independent layers for data
storage and the user can print any number or
combination. You will be asked, layer by layer,
whether or not to include them. Answer "Y" or "N" and
press [return] at each prompt.

After changing the settings, you will be returned to
the screen displaying the settings and again asked if
you wish to change anything. This time type:

<p style="text-align:center">Y [ret]</p>

After the plotting has been completed, you will be
asked if you want to plot the same file again. This
option allows you to print a file at different scales
without having to reload it each time. If you choose
to replot the file, the plotting menu will reappear
and you may proceed as before. If you choose not to
replot the file, you will then be asked if you want to
plot another file. If you choose to continue, you
will be asked for another filename and begin again.
If you choose not to continue, you will exit the plot
module and return to the Main Menu.

GLOSSARY

COMMAND - Program instructions used to create, store, and print drawings.

COORDINATES - The numbers used to locate specific points on the drawing. These number take the form of X#Y# where X0Y0 is located at the bottom left corner of the drawing.

DATA BASE - The organized alpha numeric data stored within the computer representing a drawing.

DEFAULT - The setting or value that the computer will defer to in the absence of modifying instructions from the user.

DIGITIZE - To select a point or entity on the drawing usually by pressing the firebutton at the desired spot.

ENTITY - A drawing component such as a line, circular figure, or text string.

FORMATTED DISK - A disk which has been prepared by the disk drive to receive data.

FUNCTION KEYS - The four keys located at the upper right corner of the keyboard. They are labled F1 thru F8 with even numbers representing the shifted key.

INTERFACE - The cable linking the computer and a Non-Commodore printer.

MENU - The list of commands located at the right side of the screen.

MOUSE - A peripheral device similar to a trackball which plugs into the game port and is used to input data.

MODIFIER - Additional specifications or parameters
    which can be given to a command.

OBJECT - See ENTITY.

ORIGIN - The center of a line or circle. For the
    purposes of this program, the lower left corner
    of a line of text is considered the origin of the
    text.

PIXEL - In practice, a single bit from the screen
    map. The monochrome graphics screen is normally
    composed of 320 bits or pixels across by 200 bits
    or pixels down.

RADIUS - One half of the diameter of a circle or the
    distance from the center to any point on the
    outer edge of the circle.

TEXT STRING - Any series of alpha numeric characters.

APPENDIX A
COMMAND SUMMARY

This summary lists all commands and modifiers. User data and carriage returns are enclosed in brackets , []. For detailed information, use the index at the back of the manual to locate the particular command.

CHAnge **TEXt** **HEIght** [new text height] :
      TEXt **WIDth** [new text width] :
      TEXt **HEIght** [new height] **WIDth** [new width] :
      LAYer [new layer] :
      PARameter [new parameters] :

CHEck [ret]

DELete :

DIRectory [optional partial or full filename] [ret]

DISplay [ret]

DIVide :
      INTersection :

EXClude [layer to be excluded] [ret]

EXIT [ret]

FILe [filename] [ret]

INClude [layer to be included] [ret]

INSert **LINe** :
          HORizontal :
          VERtical :
          HORizontal **LENgth** [length] :
          VERtical **LENgth** [length] :
    CIRcle **RADius** [radius] :
    TEXt   [textstring] :
    LIBrary [filename] :
              ANGle [angle in degrees] :
              SCAle [scale ratio] :
              ANGle [angle] **SCAle** [scale ratio] :
    ARC :

```
LIBrary [XY origin of new figure] [ret]

LOAd [filename]

MIRror :
        COPy :

NEW [ret]
     LAYer [layer to be deleted] [ret]

OFFset [distance between lines] :

PACk [ret]

REPaint [ret]

RESume [ret]

ROTate [angle in degrees] :
        COPy [angle in degrees] :

SELect SPEed [crosshair speed] [ret]
        TEXt HEIght [height in inches] [ret]
             WIDth [width in inches] [ret]
             ON [ret]
             OFF [ret]
        LAYer [new active layer] [ret]
        CIRcle [number of sides] [ret]
        DEVice [device number] [ret]
        SCAle [draw scale] = [full scale]

STAtus [ret]

TRAnslate :
          COPy :

TRIm :
     INTersection :

VERify :

ZOOm All [ret]
     WINdow :
     ACRoss :
```

Library [XY origin of new figure] [ret]

LOAd [filename]

MIrror :

COPy :

NEW [ret]
LAYer [layer to be deleted] [ret]

OFfset [distance between lines] :

PACk [ret]

REPaint [ret]

REName [ret]

ROTate [angle in degrees] :
COPy [angle in degrees] :

SEtact SPEed [crosshair speed] [ret]
TEXt HEIght [height in inches] [ret]
WIDth [width in inches] [ret]
ON [ret]
OFF [ret]
LAYer [new active layer] [ret]
CIRcle [number of sides] [ret]
DEVice [device number] [ret]
SCAle [draw scale] = [full scale]

STAtus [ret]

TEMplate :
COPy :

TRIm :
INTersection :

VERify :

ZOOM ALL [ret]
WINdow :
MIRos :

LIBRARY FIGURES

The program disk contains a number of preconstructed
figures drawn at a scale of 1"=1'-0". This appendix
contains a printout of the figures with their naming
conventions. (NOTE: The "PL" in a figure's name
indicates a plan or top view.) The figures are shown
at 1/4"=1'-0" scale and 0 degrees rotation. The
crosshair associated with each figure shows that
figure's origin. For example, the 60" tub shown in
the first figure has it's origin at the upper right
corner. This allows the user to insert the figure
using the "End" data modifier and digitizing the rear
of the tub enclosure.

The water closet has it's origin centered and 2" to
the rear which allows the insertion of the figure,
using a data modifier such as "Near", 2" from the
wall.

The windows are sized for a 3-1/2" wall (or .292"
parallel lines at 1"=1' scale). Windows come in even
sizes (ie: in increments of 2") from 16" to 60" wide.
For example, to INSert a 30" wide window at 90 degrees
rotation on a 1/4"=1'-0" plan type:

INS LIB WIN.PL.30 SCA .25 ANG 90 :

The disk drive will be accessed while the program
checks for the figure and then loads the data. You
will then be prompted for a DRAWing LOCation.
Digitize a point on the line representing the inside
of the wall using one of the data modifiers for exact
positioning (The origin of the window is the inner
wall side at the center of the window. Using a data
modifier such as "Near" will correctly position the
sides of the window. Since the location of a window
is usually shown as a distance from a wall that is
perpendicular to the window, the user can create a

dimension line from the perpendicular wall, using the
OFFset command, and use that line to locate the
window.).

The doors are sized for a 3-1/2" wall in the same
manner as the windows. The doors are even sizes from
18" to 36" wide and are drawn in left hand and right
hand configurations.

The two compartment sink is sized to fit a 24" wide
countertop and is 33" wide. The origin is centered
and 1" from the front. This location (of the origin)
allows the placing of the sink using the front edge of
the counter as the reference.

Also contained are figures representing plan views of
common household furnishings such as chairs and sofas.
These figures are clearly marked as to type and size
in the disk directory.

Samples of different types of drawings are included on
the disk. The filenames are CHAS.HOUSE.1,
SSBN598.NF1G, and CAP.DETAIL. CHAS.HOUSE.1 provides a
sample floorplan. As an example of how far in you can
go, try Zooming in on the faucets in the half bath.
SSBN598.NF1G, which was scaled from a plastic model
kit, demonstrates the use of elliptical shapes. There
are 5 partial ellipses in the drawing; see if you can
find them. The last figure, CAP.DETAIL, provides a
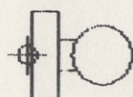perspective view of a column capitol.

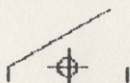To create your own library figures see the LIBrary
command.
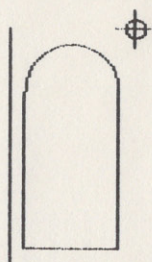
BT.PL.60

WC.PL

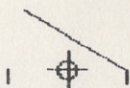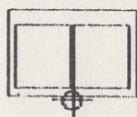WIN.PL.## where ##=16" to 60"

DR.PL.LH.## where ##=18" to 36"

DR.PL.RH.## where ##=18" to 36"

SINK.PL.DBL

BT.FL.60

WC.FL.

WIN.FL.44 where 44=16" to 60"

DR.FL.LH.44 where 44=18" to 36"

DR.FL.RH.44 where 44=18" to 36"

SINK.FL.DBL.

PRINTER SETUP

On the second page of this manual is a list of printers
which have been successfully used with this program.
If your printer is not listed, but is graphics
compatable with one of them, particularly the EPSON
printers, chances are the program will work with your
printer.

The link between your computer and printer is known as
an interface. Some printers such as the VIC-1525, the
MPS-801, and the Seikosha SP1000VC have their
interfaces built in and are thus known as direct
connect printers. Most printers, however, will not
directly connect to the 128 but support a type of
connection known as Centronics Parallel. In order to
connect a parallel printer to the computer you will
need a SERIAL TO PARALLEL interface. A number of these
interfaces are on the market, but the four that I have
had personal experience with are the CARD? +G, the
GWIZ, the XETEC Super Graphics, and the MW-350. Of the
four, the CARD? +G, the GWIZ and the XETEC were the
easiest to use. The MW-350 uses power taken from a
joystick port for some printers.

If you are using a Star SG-10 or 15, and plan to use
high resolution graphics, you need to be aware that the
high resolution driver for these printers was written
to use the IBM emulation mode which is set with dip
switch 2-2 as shown on page 231 of thr Star reference
manual. Draft prints are made in Star mode.

The following dip switch settings were used
successfully on the CITOH 8510, EPSON RX-80, EPSON
FX-80, and the STAR SG-15 with the Cardco CARD? +G
interface. Although I can't guarantee these settings,
they should at least get you in the ballpark. Before
resetting your switches, however, it would not hurt to
try a sample plot with your printer in it's normal

setting. My personal printer, a CITOH 8510, works fine
with "HOME DESIGNER" and a number of other programs
such as "PAPERCLIP" without changing the dip switches.

For the CITOH 8510 using the Cardco CARD? +G interface,
the interface settings are:

dip switch #	1	2	3	4	5	6	7	8
position	o	o	o	o	o	o	o	o
	n	n	f	n	f	n	n	f
			f		f			f

On the CITOH 8510 there are 2 sets of dip switches
marked SW1 and SW2. Their settings should be:

SW1

dip switch #	1	2	3	4	5	6	7	8
position	o	c	o	o	o	c	o	c
	p	l	p	p	p	l	p	l
	p	o	p	p	p	o	p	o
	e	s	e	e	e	s	e	s
	n	e	n	n	n	e	n	e
	d		d		d			d

SW2

dip switch #	1	2	3	4	5	6	7	8
position	c	o	o	o	o	c	o	c
	l	p	p	p	p	l	p	l
	o	p	p	p	p	o	p	o
	s	e	e	e	e	s	e	s
	e	n	n	n	n	e	n	e
	d					d		

On the EPSON and STAR printers, no internal adjustments
were made, however, bear in mind the need to use the
IBM mode on the Star SG printers for high resolution
prints.

On the interface, a Cardco CARD? +G, the switches were

set as follows:

```
dip switch # 1   2   3   4   5   6   7   8
position     o   o   o   o   o   o   o   o
             n       f   n   n   n       f   n   n
             f                           f
```

The XETEC interface was tested with the Panasonic
KX-P1091i and the EPSON RX-80. For both printers, the
switches were set as follows:

```
dip switch # 1   2   3   4   5   6   7   8
position     o       o   o   o       o   o   o
             f       f   f   f   n   n       n   f
             f       f   f   f                   f
```

The direct connect printers (ie: VIC-1525, etc) don't
require an interface. The printer driver for the 1525
was included as a possible solution for printers
capable (with proper interfacing) of emulating the
graphics of the 1525. The driver also works with the
MPS-801. If you have a direct connect printer such as
the Star NX-10C that is supposed to be Commodore 1525
graphics compatable, but shortens lines in the X axis,
try the Seikosha SP1000VC driver.

NOTE: Okidata-120 users; if your printouts are too
"heavy", try setting switch 7 on your printer (see
Appendix A of your printer manual) to ON (if it isn't
already) and configure the program for the Seikosha
SP-1000VC as described in Appendix F of this manual.
The Okidata 120 uses a double strike method to achieve
120 dots per inch (ie: for every dot mapped, the
printer strikes twice giving a "heavy" appearance to
the line). With the exception of the command to set
the printer into high density mode, the Seikosha
SP-1000VC and Okidata 120 drivers are identical.

If the drawing you are working on is fairly complex,
such as a 1/4" scale floorplan, half size checkprints
will be satisfactory until the drawing is complete.

To get the half size prints, take the default scale of
.5 and PASS 1. When you are satisfied with the
drawing and are ready for full size prints, obtain a
sheet of vellum from your bluprint store (at least 20"
X 30") and then try this procedure.

During the printing process, the program is looking at
the data and creating a drawing at the scale you
selected. A full size 16" X 22" drawing, (scale = 1),
is not going to fit on a printer with a maximum width
of 8". With a little extra effort, you can make
satisfactory full size drawings using the PASS options
in the printing sequence. As an example, assume the
user selected PASS1 and a scale of 1 for printing.
PASS 1 will print the lower half of the drawing at the
proper scale. PASS 2 will do the same for the upper
half of the drawing. Set your printer to work with
friction feed (if you have that option on your
printer. If you don't, you will have to print on
tractor fed bond). Now print the upper and lower half
of the drawing using the PASS options.

Using a razor knife and a good straight edge (such as
a framing square), carefully trim the excess paper
from one edge of ONE sheet. Align the edges of the
drawing and secure using tape on the rear flap of the
uncut sheet. (If you are limited to tractor feed,
piece your drawing together the same way. Any good
blueprint shop should be able to make a vellum
positive from your bond original.) The blueprint is
then made from the vellum positive. Although a
printer will print on mylar, some time is required for
the ink to dry.

On wide carriage printers like the STAR SG-15, you
have a plot field 13.6 inches wide. An effective
technique with this type of printer is to simply
center the drawing in the lower 13.6 inches of the
drawing area. The LIBRARY command can be used to
shift an entire drawing around (See APPENDIX I for a
discussion). Print the drawing out at a scale of 1 on

PASS 1, preferably on vellum, and have your blueprint shop center it on a C size bordered format. For thos of you who like myself don't need a full C size drawing, I have included a blank 22" wide X 13.6" higl drawing format (FORM.C.WIDE.CAR) on your program disk Using this format, you can build your drawings to fit a wide carriage printer.

PASS 1, preferably on vellum, and have your blueprint
shop center it on a C size bordered format. For those
of you who like myself don't need a full C size
drawing, I have included a blank 22" wide X 11.6" big
drawing format (FORM.C.WIDE.CAM) on your program disk.
Using this format, you can build your drawings to fit
a wide carriage printer.

APPENDIX D

PLOTTER SETUP

On the third page of this manual is a list of plotters
which have been successfully used with this program.
Since plotters are not a very common peripheral, I
have spent very little time developing drivers for
them. The little CBM 1520 is fairly common (as
plotters go) and this driver should allow the owners
to dust them off and get a bit of use from them. If
you have an Hewlett-Packard compatable plotter, the HP
7470A driver shold get you going as it was written
using a subset of the HP graphics language; Nothing
fancy, just a nuts and bolts driver. As time and
equipment permits, I plan to add drivers for other
plotters.

The link between your computer and plotter is known as
an interface. The CBM 1520 alone (to the best of my
knowledge) has a built in connection and therefore
does not require a separate interface. Most plotters
however, will not directly connect to the 128 but
support a type of connection known as RS232 Serial (Do
not confuse this with the CBM Serial buss. They are
NOT the same.). In order to connect a serial plotter
to the computer you will need a SERIAL TO PARALLEL
interface. The only interface I have used is the
Omnitronix CBM serial to RS232 serial interface.
(Omnitronix, Inc PO Box 43, Mercer Island, WA 98040,
Phone (206) 236-2983) In dealing with interfacing
problems, I have had to contact Omnitronix and found
their user support to be first rate. Although there
are a number of RS232 interfaces available for the
USER port, this program does not support them due to a
memory conflict.

The HP 7470A had it's DIP switches (located at the rear) set as follows:

```
        2   1           S   4   3   2   1
        S   S   Y       U   B   B   B   B
                        X   X   X   X
        X   X   X                       1
                                        0
```

The Omnitronix was configures as follows:

```
dip switch # 1   2   3   4   5   6   7   8
position     o   o   o   o   o   o   o   o
             n   f   f   n   n   f   f   f
             f   f           f   f   f   f
```

These settings correspond to a BAUD RATE of 2400, 8 bit word with no parity, device #4, no linefeeds, and DTR (otherwise known as hardware) handshaking.

APPENDIX E

DATA STRUCTURE

This appendix is provided for those users who have a
properly interfaced plotter other than those already
supported. If you write a plotter driver that you are
willing to share with other users, send me a copy of
the source code and documentation (including
interfacing details) and it will be included on future
releases (with authorship acknowledged if desired) and
available to current owners. We cannot provide any
royalties or reimbursement.

The data is stored in the form of a sequential file.
There are three types of data. The first type is line
data, the second is circular data, and the third type
is for text. Each data type has it's own structure
and to keep it straight, the program uses a series of
pointers. The first value in the drawing file is an
integer (maximum value = 7) indicating which types of
data are contained within the file. If the result of
this integer AND 1 is true, then the file contains
line data. If the result of this integer AND 2 is
true, then the file contains circle data. If the
result of this integer AND 4 is true, then the file
contains text data. Using this integer, the program
knows which types of data to look for. The data
blocks are stored in the sequence LINE, CIRCLE, and
TEXT. The first 5 values (integers) of each block
indicates the number of entities of that type on each
layer plus 1. For example, if the first six integers
of a file were 1, 5, 1, 1, 1, and 1 then the first
number, a 1, would indicate that only line entities
were present and no circles or text. The remaining
five numbers, 5,1,1,1,1 would indicate that the file
contained 4 line entities on the first layer and none
on layers 2 thru 5.

All line data is stored in integer format. Each line
has four values in the form of X1 Y1 X2 Y2. The real

number represented by these values can be obtained by
dividing each value by 1000. (ie: 2.578 is stored as
2578)

The second block, circular figures, the first five
values are stored in integer format and indicate the
number of values stored on each layer. Each circle is
allocated eight (all in integer format as is line
data) values arranged as follows:

1st value....X coordinate
2nd value....Y coordinate
3rd value....X axis (see **CHA**nge **PAR**ameter command)
4th value....Y axis (see **CHA**nge **PAR**ameter command)
5th value....starting angle in radians
6th value....ending angle in radians
7th value....angle of rotation (for ellipses only)
8th value....set to a value of 4 for rectangular
figures. Set to 0 for all others.

In the final block, text, the first five values (again
stored in integer format) indicate the number of
values stored on each layer. The data for each entry
is stored as follows:

1st ....X coordinate (integer, divide by 1000)
2nd ....Y coordinate (integer, divide by 1000)
3rd ....Reserved for font designator
4th ....Text height (integer, divide by 1000)
5th ....Text width (integer, divide by 1000)
6th ....Text angle (real, positive counterclockwise)
7th ....Text string

APPENDIX F

CONFIGURE

The CONFIGURE module accessed from the Main Menu
creates a file called the EXECUTIVE.   This file is
read by the program, and among other things, defines
the printer you are using, the width of your graphics
screen, and the allocation of your disk drives if you
are using two drives. To use the module, select option
5 on the Main Menu (For your own protection, configure
your backup copy and not your original program disk.
The program disk is unprotected, but if you are using
the copy utilities that came with the 1571 disk drive,
see Appendix H.) The first choice presented will ask
you whether you want to create a new EXECUTIVE file or
rework an old one. If you choose to rework an old one,
the existing EXECUTIVE file will be read from the disk.
If you choose to create a new file, the default
settings will be read. After your selection has been
performed, the program settings will be displayed.

If you want to make any changes, answer "Y" to the
prompt and you will be asked to select a number
corresponding to the parameter you wish to change.

The first parameter concerns the selection of a printer
driver. The program will display a list of printers
with the first one highlighted. Using your cursor
keys, select the your printer and press:

[ret]

The program will respond by asking if you are sure of
your selection. If you are satisfied, press:

Y

You will return to the settings display screen with the
new printer shown. Again you have the option of
accepting the settings or changing them. Lets assume

you want to change all of them and step through them
one by one.

The second settings identifies your plotter. If you
don't have a plotter, then ignore it. Otherwise
proceed in the same fashion as you did with the
printer selection.

The third parameter concerns the aspect ratio of the
display. If you select this, the screen will clear
and you will be asked to select a screen display
ratio. Depending on the monitor or TV you are using,
some correction factor may be needed to minimize
horizontal distortion. This distortion makes
horizontal lines look shorter than vertical lines of
equal length. Perhaps an easier way to visualize this
phenomena is to picture a circle that on some monitors
appears round and on others appears egg shaped. This
screen distortion will not affect your printer output.
Number 1 will select a ratio of 1 to 1. This ratio
works quite well with monitors having a 40/80 column
display setting such as the Zenith ZVM 121. Number 2
selects a ratio of 1.25 to 1. This is the maximum
allowable ratio and also works quite well with
monitors like the Commodore CM 141. If you select
number 3, you will be prompted for some value between
the two extremes.

Unless you have a monitor with a 40/80 column setting,
try the 1.25 to 1 ratio first. If, after running the
program, your image is distorted (circles appear
stretched horizontally), rerun the CONFIGURE module
and try a smaller number using option 3.

When you have returned to the settings display screen,
the new screen ratio will be shown. This now brings
us to the last two selections which are only of
concern to the user with two disk drives. Library
figures are best stored on a disk separate from the
disk you use to store your drawings. If you are using
two drives, you can specify one drive for library

figures and one for drawing files. The drive
designated for Library Figures will be a "Read Only"
drive. The **FILe** command will only access the other
drive. You may toggle between the directories with the
SELect DEVice command. <u>Bear in mind, the program disk
(or your copy of it) must be in drive #8.</u> For this
reason, the best setting is usually for drive #8 to
contain the program disk with it's library figures and
drive #9 to contain your drawing data disk.

The final two selections are used to define the screen
colors. As you make your selections, the display
colors will change.

When you have completed your changes, you will be given
the opportunity to save your changes. If you answer
Yes, the new EXECUTIVE file will be written to disk,
and you will then be returned to the Main Menu.

figures and one for drawing files. The drive
designated for Library Figures will be a "Read Only"
drive. The Film command will only access the other
drive. You may toggle between the directories with the
Select DEVice command. Bear in mind, the program disk
(or your copy of it) must be in drive 9B. For this
reason, the best setting is usually for drive 9B to
contain the program disk with it's library figures and
drive 9? to contain your drawing data disk.

The final two selections are used to define the screen
colors. As you make your selections, the display
colors will change.

When you have completed your changes, you will be given
the opportunity to save your changes. If your answer
is Yes, the new EXECUTIVE file will be written to disk,
and you will then be returned to the Main Menu.

APPENDIX G

KEY DEFINITIONS

The eight function keys on the upper right corner of your keyboard are recognised by "HOME DESIGNER". The keys are predefined as follows:

F1	INS LIN :	F2	INS ARC :
F3	DIR	F4	STATUS
F5	INS LIN HOR :	F6	INS LIN HOR LEN
F7	INS LIN VER :	F8	INS LIN VER LEN

The key definitions are stored on a file on the program disk called "KEY". To redefine the keys, turn on your computer and disk drive (without the program disk in the drive). Type:

KEY [ret]

The computer will provide you with a list of the default key settings. Edit the keys to your satisfaction ,insert your backup disk (see APPENDIX F) and then type:

BSAVE"KEY",B0, P4096 TO P4352 [ret]

The disk drive will be accessed and the new key definitions stored. To edit your selections, place the disk in the drive and type:

BLOAD"KEY" [ret]

The definitions will be restored and can be edited with the KEY command as discussed above. You can then resave your new definitions.

KEY DEFINITIONS

The eight function keys on the upper right corner of your keyboard are recognized by "HOME DESIGNER". The keys are predefined as follows:

```
F1 INS LIN :              F2 INS ARC :
F3 DIR                    F4 STATUS
F5 INS LIN HOR :          F6 INS LIN HOR LEN
F7 INS LIN VER :          F8 INS LIN VER LEN
```

The key definitions are stored on a file on the program disk called "KEY". To redefine the keys, turn on your computer and disk drive (without the program disk in the drive). Type:

KEY [ret]

The computer will provide you with a list of the default key settings. Edit the keys as for your satisfaction. Insert your backup disk (see APPENDIX F) and then type:

SAVE"KEY",D0,P4096 TO P4352 [ret]

The disk drive will be accessed and the new key definitions stored. To edit your selections, place the disk in the drive and type:

LOAD"KEY" [ret]

The definitions will be restored and can be edited with the KEY command as discussed above. You can then reserve your new definitions.

7.0 DOS COMMANDS

This appendix is provided as a service to new users of Commodore equipment and not as any replacement for the disk drive manual. If you don't feel inclined to wade through the manual, this appendix will get you going. Please note that these examples assume your disk drive is device # 8.

FORMATTING A DISK: **In order to save any kind of data to disk, the disk must be formatted.** Virtually every new user, myself included, seems to be unaware of this basic fact of computing. To format a disk, insert a blank disk into the disk drive and close the door on the drive. The syntax for the command is:

HEADER"DISKNAME",I##

DISKNAME can be anything you wish to call the disk up to 16 characters. The ID (represented by ## after the letter 'I') can be virtually any two alpha numeric characters, such as J1 or 34. Be sure to put the comma between the diskname and the ID. WARNING: This command will destroy everything on the disk so be certain that the disk is blank before formatting it (see the section on disk directories). The formatting procedure takes several minutes in a 1541, so, if your disk already has been used, you can save time by reformatting the BAM which only takes a few seconds. Type:

HEADER"DISKNAME" [ret]

The only difference between this command and the first one is that the ID has been omitted.

As an example :

HEADER"SAMPLE",I34

where 34 represents the disk ID as already discussed.

If the disk has already been used, type:

HEADER"SAMPLE" [ret]

and the disk will be reformatted in seconds.

SAVING A PROGRAM: In order to save a BASIC program, insert a formatted (see above) disk into the disk drive and close the door. Make sure that the write protect notch on the left side of the disk is uncovered. The syntax is:

DSAVE"FlLENAME" [ret]

where FILENAME is any name you care to give your program.

LOADING A PROGRAM: To load a program from disk type:

DLOAD"FILENAME" [ret]

where FILENAME is the name of the program you wish to load. The command DLOAD specifies a disk drive and the default device number is 8. Some programs, usually machine language, have to be loaded into the section of memory from which they came. The command for this is:

BLOAD"FlLENAME" [ret]

If you can't remember your program name, you can list the disk directory and load directly from it. Type :

DlRECTORY [ret]

or press F3.

The disk drive will whirl and then the screen will

display the contents of the disk. If you want to slow
or stop the listing use the NO SCROLL key at the top
of the keyboard. To abort the command press the RUN
STOP key. The list of all files on the disk will be
displayed in the following format:

           #   "FILENAME"   FILETYPE

where # represents the number of blocks occupied by
the file, "FILENAME" is the name of the filename, and
FILETYPE is the type of file such as PRG, SEQ, and
USR. To load a BASIC program from the disk directory
first move the cursor to cover the number representing
the number of blocks and type DLOAD. Then use the
cursor controls or the TAB key, not the space bar, to
move the cursor to the right side of the filename and
then use the spacebar to erase the filetype
designator. After the program is loaded, move the
cursor below the disk directory and then type RUN and
press [ret].

SCRATCHING A FILE: To scratch or erase a file from the
disk type:

              SCRATCH"FILENAME" [ret]

FILENAME, as before, refers to the name of the file
you wish to erase.

RESAVING A PROGRAM: If you want to save an updated
version of a program and use the same name, first
scratch the file on the disk and then save the updated
version (you could play it safe by saving the new
version under a temporary name, scratching the old and
then renaming the new). Commodore DOS supports a SAVE
WITH REPLACE command,(see disk manual), but a number
of users have had problems using it, read that as lost
files, so I do not recommend it.

As stated, Home Designer not copy protected, however several users have tried unsuccessfully to copy the disk using the DOS Shell file copy utilities included with the 1571 disk drive. If you don't have access to a commercial or good public domain file copier, you can, with a bit of effort, use one of the C64 copy utilities on the 1571 disk. In general, to make a 1571 format copy of the program side of the disk (put library figures on a separate disk) requires 3 steps:

A. Format a new disk as follows:

HEADER"BACKUP",IB1

This command will completely erase the disk, so be sure to use a blank disk or one with no data you wish to save.

B. Use the Autoboot maker included on the 1571 disk to create an autoboot sector on the newly formatted disk. When the Autoboot maker program asks for the name of the program to boot, type:

HOME DESIGNER

When the Autoboot maker program asks for the type of program take the default answer of BASIC.

C. Go to 64 mode and use the utility named SD.COPY.C64 to actually copy the files. NOTE: In 64 mode you will need to use DOS 2.0 commands such as:

LOAD"SD.COPY.C64",8,1 [ret]

Again, a good file copier, such as FAST HACKEM, will do the file transfers much more easily, but in a pinch the SD.COPY.C64 will work.

APPENDIX I

HINTS & TIPS

1. Under most conditions the ESC key located at the upper left corner of the keyboard will bail you out of a command.

2. In constructing complex figures, speed becomes the primary constraint. To speed things up try:

   A. Turn off text. Even with text turned off, it (the text) will be visable until the graphics are repainted.

   B. Select circles to have less than 16 sides. Eight sides is an adequate representation for most applications. This will not affect your hardcopy.

   C. Turn off unneeded layers.

   D. Use the ZOOM ACROSS command to move around where practical. This saves regenerating graphics twice when you ZOOM ALL and then ZOOM WINDOW.

   E. Build your framework and insert your library figures last. Complex figures can increase the entity count quite rapidly with a corresponding loss of speed.

3. If you start a drawing and find out it is off center, you can shift the whole drawing around with the LIBRARY command. Decide where you want your new X0Y0 to be, and feed the program those coordinates with the LIBRARY command. When you REPAINT the drawing you will see it has been relocated.

4. When in doubt, look it up in the index, particularly if something doesn't seem to be working properly.

APPENDIX J

<u>SCALED UNITS</u>

"HOME DESIGNER"'s work area simulates a sheet of paper
16" high X 22" long. If you were working on a
drafting table, you would have certain basic tools to
allow you to create a precise and accurate drawing.
Since we can't use physical tools to make our drawing,
we will need software tools to simulate them.

One of the most basic tools is the T-Square which is
used to draw horizontal lines, and in conjunction with
a 90 degree angle, draw vertical lines. These tools
are represented by the INSERT LINE HORIZONTAL and
INSERT LINE VERTICAL commands. Other tools such as
the compass (INSERT CIRCLE or INSERT ARC) and parallel
bars (OFFSET) are also simulated by our software
tools; In fact, almost every common drafting tool has
it's counterpart in "HOME DESIGNER". "HOME DESIGNER"
also provides tools and capabilities unlike anything
possible on a manual drafting table.

One of the program's more intresting tools, and the
main focus of this appendix, is it's ability to use
scaled English Units to simulate the Architects Scale.
The next paragraph is for the benefit of those not
familiar with architectural scales and may be skipped
by more advanced users.

The architectural scale is a special kind of ruler,
usually three sided, that measures distances (or
lines) in special units that represent feet. These
units vary in length from 3/32" to 3" and are refered
to as the "scale" of the drawing. In practice, a
drawing using 1/4" = 1' scale (the most common) would
represent 4' with a 1" line.

As mentioned above, "HOME DESIGNER"'s work area
represents a 16" X 22" sheet of paper. Objects (such
as lines) placed on this drawing area are located in
the database by a set of absolute coordinates
representing their XY location in inches on the
drawing. X0Y0 is located in the lower left corner of

the drawing. X increases to the right and Y increases
vertically and up. The upper right corner represents
X22Y16. While inserting certain objects (parallel
lines with the OFFSET command, horizontal and vertical
lines with a specified length, and circles), the user
has the option of using absolute units, ie inches, or
scaled units. The program differentiates between the
two types of units based upon the form of the
dimension. For example, a line inserted thus:

INSert LINe HORizontal LENgth 4 :

would be drawn 4 inches long. The same command typed:

INSert LINe HORizontal LENgth 4' :

with the scale set at 1/4" = 1' would be only 1 inch
long. For scaled units, the program recognises the
characters ' " / and -. Thus, a dimension of eight
feet seven and three quarters inches can be written
8'7-3/4". Decimal representations are allowed so the
previous example could have been written 8'7.75".
Fractions of a foot are allowed such as 8.5' which
represents eight feet six inches.

APPENDIX K

TEXT MERGING

The "HOME DESIGNER" disk contains a short BASIC
utility called TMERG which will read a file from
Paperclip (and probably other word processors that can
create a SEQ file) and create a file called XFER that
can be inserted into a drawing a library figure. If
you have a large amount of text to place in a drawing,
editing with a word processor can save a good deal of
time. To use this utility, first create your file
with the wordprocessor. Each line must be ended with
a carriage return. I also add a single blank space
before the carriage return. Blank lines consist of a
shifted space and a blank space followed by a carriage
return. Save the text a Sequential file, return to
BASIC (i.e. bail out of the wordprocessor) and load
the program TMERG. If you LIST the program you will
see REM statements identifying the variables declared
on lines 190 thru 260 (see Appendix E). The program
defaults to .1" high X .1" wide characters as declared
on line 220 with a line spacing of 1.5 X character
height. For most applications, line 220 is the only
one you might need to change. Keep in mind the amount
of text space available in the main program. If you
create a file that is too large, it won't fit in a
HOME DESIGNER database. Also remember that library
figures are inserted into the active layer, so you
cannot have more than 100 lines.

TEXT MERGING

The "HOME DESIGNER" disk contains a short BASIC
utility called TMERG which will read a file from
generally (and probably) other word processors that can
create a SEQ file) and creates a file called XVER that
can be inserted into a drawing a library figure. If
you have a large amount of text to place in a drawing,
editing with a word processor can save a good deal of
time. To use this utility, first create your file
with the wordprocessor. Each line must be ended with
a carriage return. I also add a single blank space
before the carriage return. Blank lines consist of a
carriage space and a blank space followed by a carriage
return. Save the text a sequential file, return to
BASIC, bail out of the wordprocessor, and load
the program TMERG. If you LIST the program you will
see REM statements identifying the variables declared
on lines 170 then 250 (see Appendix E). The program
defaults to "I" high X "I" wide characters as declared
on line 210 with a line spacing of 1.5 X character
height. For most applications, line 220 is the only
one you might need to change. Keep in mind the amount
of font space available in the edit program. If you
create a file that is too large, it won't fit in a
HOME DESIGNER database. Also remember that library
figures are inserted into the active layer, so you
cannot have more than 100 lines.

INDEX